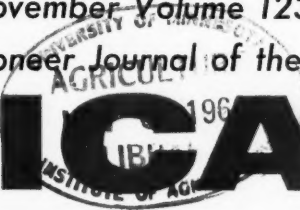


FARM CHEMICALS

November Volume 123 No. 11 50 cents
Pioneer Journal of the Industry



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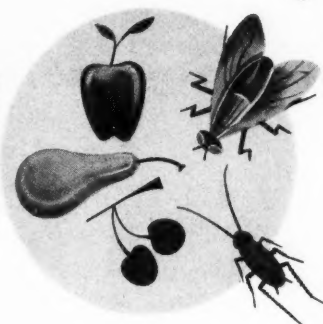
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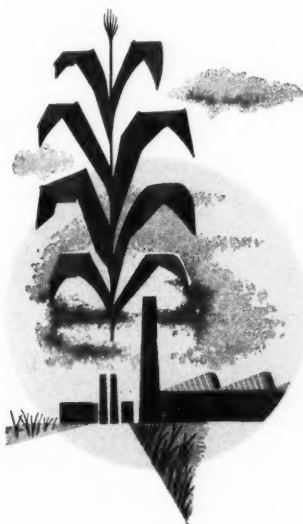
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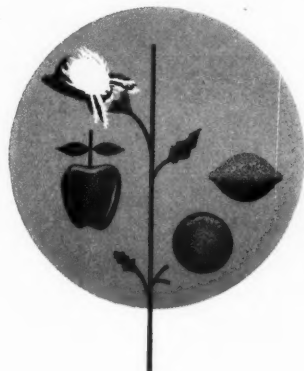
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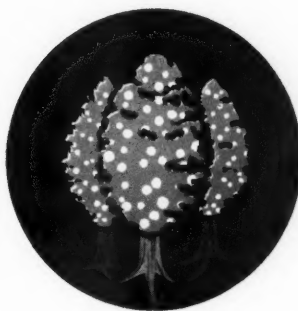
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MEMBER BUSINESS PUBLICATIONS AUDIT

The national business magazine for the fertilizer and pesticide industries, **FARM CHEMICALS**, serves primarily those persons responsible for management, marketing and production. It has a qualified circulation for selected executive and supervisory persons within specified segments of these industries, as well as in certain closely allied fields. Subscription rates to all others are: in the U.S., its possessions, Canada, Cuba and Panama: \$6.00; in other countries: \$7.50. Current issue 50 cents. Back issues \$1.00. (Current issues become back copies on the 5th of the month following publication.) Established in 1894 as *The American Fertilizer*.

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THE COVER PICTURE

Optimum efficiency enables Monsanto Chemical Company to better serve customer needs during peak demand periods for anhydrous ammonia and ammonium nitrate, through its Barton plant, Luling, Louisiana. Reason: A digital computer, which virtually "runs" the operation. In photo Glenn Scott, (left) New Orleans district sales manager, listens to Guy Legendre, process engineer, explain how computer *digests* mathematical data and automatically *applies* it to control entire plant process. **FARM CHEMICALS** photo.

FARM CHEMICALS



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Center of 5 rail systems puts Sohio products plant-side fast . . . dependable, low cost, convenient

Sohio's fleet of modern tank cars highball down a network of 5 different rail lines . . . write a super-speed delivery story in every corner of Sohio-land. This strategic location and up-to-the-minute equipment make Sohio a specialist in quick-time delivery of nitrogen products.

Sohio's tank car specifications are tailored to meet your specific requirements. Top and bottom unloading aluminum and steel cars provide aqua ammonia service . . . special aluminum cars with spring-loaded safety valves handle nitrogen solutions. Sohio cars carry the latest safety devices . . . and Sohio-trained personnel inspect and maintain the tank cars to assure top mechanical condition and quality control every mile of the way. Important too, Sohio is alert to the development of new equipment that means further improvement in Sohio service.

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CHEMICAL COMPANY

WHAT'S DOING IN THE INDUSTRY

F
C

IMC BUYS NEW FERTILIZER PLANT

International Minerals and Chemical Corp. has contracted to purchase E. Rauh and Sons Fertilizer Co., which operates three plants and sells in five Midwestern states. This will enable IMC to give more adequate market coverage to this area where use of fertilizer has grown most rapidly.

The Rauh plants are located in Indianapolis, Plymouth, Ind. and Sylvania, Ohio.

The contract calls for the transfer of 119,600 shares of IMC common stock in exchange for all of Rauh's stock.

IMC spent nearly \$12 million for plant additions, expansion and improvements in fiscal 1959-60, according to the company's 51st annual report issued recently.

The report lists record sales of \$123,870,000, compared with \$112,560,000, the previous peak. Net earnings were \$7,481,000 or \$3 per share on the 2,365,164 common shares outstanding, compared with \$6,189,000 or \$2.47 per share last year.

There was a 21 per cent gain in earnings on a 10 per cent gain in sales for the fiscal year ending June 30, 1960, the second year of marked sales and earnings improvement.

The largest expenditure was \$6.1

million supplied to IMC's Canadian subsidiary toward the completion of a new potash mine and refinery near Esterhazy, Saskatchewan, which is the corporation's "most current project."

NATIONAL DISTILLERS ACQUIRES FERTILIZER CO.

National Distillers and Chemical Corp. has made arrangements for acquisition of operating assets of Minnesota Liquid Fertilizer Co., according to a joint announcement. Roy F. Coppedge, Jr., president of National Distillers, stated that the distribution stations will continue to be operated by the people now running them.

Minnesota Liquid Fertilizer Co. distributes anhydrous ammonia for direct application to the soil through 32 ammonia stations throughout Minnesota. U. S. Industrial Chemicals Div. of National Distillers manufactures anhydrous ammonia and other fertilizer raw materials.

CHEMAGRO CORP. APPOINTS DIRECTOR OF ADVERTISING

W. Scott James has been named director of advertising for Chemagro Corp., Kansas City, Mo., manufacturer of agricultural chemicals. He was formerly sales manager of the eastern region and served as advertising manager.

ARMOUR ANNOUNCES \$60 MILLION EXPANSION PROGRAM

Armour and Co. has announced their expansion program for Armour Agricultural Chemical Co. New facilities for production of phosphates and nitrogen will approximately triple current production during 1962. The nitrogen plant will be built at Sheffield, Ala. and phosphate operations in Polk county, Fla.

The nitrogen plant will produce ammonia, nitric acid, urea, nitrogen solutions, ammonium nitrate and other ammonia derivatives and will employ 200 to 250 persons. The phosphate plant will extract and process phosphoric acid and triple superphosphate and will also manufacture sulphuric acid, an intermediate chemical used in production of the end products. Employment will be about 250 persons.

There are several other new plants involved in the expansion program. They will be compact units designed for production of new liquid mixed fertilizers and bulk blended fertilizers. These will be located in the rural Middle West. The company will also continue an extensive modernization program for existing fertilizer mixing plants. There are 27 of these located in the U. S. and one in Puerto Rico.

CACA'S 8TH ANNUAL MEETING HELD IN SEPTEMBER

At the CACA 8th annual meeting and conference in September at Lake of Bays, Ontario, the following officers were elected for the coming year: president, J. K. Brown, Sherwin Williams Co., Montreal; 1st vice president, J. G. Hastings, Chipman Chemicals; 2nd vice president, D. K. Jackson, Monsanto Canada Ltd.; secretary, C. R. Burrows, Allied Chemical Canada Ltd.; treasurer, M. Propas, Chemical Specialties Assn.

The conference was attended by some 175 delegates, representing manufacturers of pesticides from Canada, U. S. A. and European countries, together with scientists from government, university and industrial life.

Meeting Highlights

THIS MONTH:

California Fertilizer Association 37th Annual Convention

Hotel del Coronado, Coronado, California

November 13-15. Featured speakers will be Tyler MacDonald, senior vice president, Hixon and Jorgensen, Inc., Los Angeles, and Leon V. Tichinin, Santa Clara Agricultural Extension Service, University of California, San Jose. MacDonald, an authority on sales technique and market development, will address the business session on the subject "The New Look in Selling."

Tichinin will speak following the business luncheon on "What I Learned From 20,000 Russians in Moscow." He was one of two Russian-speaking experts on American agriculture to go to the American National Exhibition in Moscow during the summer of 1959.

Four directors will be elected to serve three-year terms, and the new Board will elect officers to serve during 1961.

The ladies will enjoy a social hour as guests of the Association, and will have a choice of competition in bridge, canasta, golf, putting and a mixed bowling tournament. The men will have choice of a golf tournament and the mixed bowling tournament. Prizes will be awarded to winners in all competition.

The annual banquet will feature dinner dancing on the last evening of the convention.



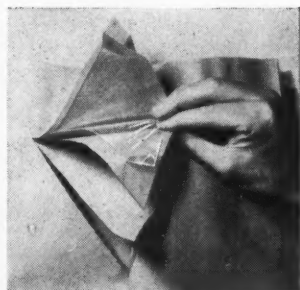
"This new CHASE POLY-PLY multiwall bag is a real Problem Solver"

Says Lee Schram, Multiwall Bag Buyer, Morton Salt Company

The Morton Salt Company needed a new and better bag for its salt shipments—a moisture-resistant bag that would be easier to handle and ship, more flexible at low temperatures, highly resistant to abrasion and rupture, yet economical in cost.

To solve this problem, Chase developed the Poly-Ply Multiwall Bag featuring an entirely new construction. It combines—for the first time—the advantages of a ply of light-weight sheet polyethylene and heavy-duty multiwall paper. It provides excellent moisture protection...extra strength...new ease of handling...flexibility even at temperatures way below zero. After six months testing under commercial conditions Morton officials report highly satisfactory results!

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LETTERS

**F
C**

ANALYSIS OF LOST SALE

Rochester 17, N. Y.

As a purchasing agent of several years experience, I take exception to the analysis of this lost sale ("Don't Play with Price," in the October FC).

The buyer did his part. He called as promised at 9:20, ten minutes early. The seller said *he* would pick up the check. Instead, he sent the errand boy. The buyer, to whom \$5200 was evidently a major expenditure, (the president writing checks) was upset that the seller did not think enough to come himself to get the check, and personally say, "Thank you" for the order.

Nor does the article as printed mention that the buyer was advised that the salesman was sending the substitute. A 4-cent stamp would have permitted mailing of the check, the simplest procedure.

The essence of the lost sale is the salesman did not do as *he* promised—nor did he think enough of the order to say "thank you" in person—a courtesy the buyer expected.

Sincerely,
E. A. DUBIEL

PURCHASING PATTERNS

South Norfolk, Virginia

Would it be possible for you to furnish the writer with 15 reprints of the article "Farmer Purchasing Patterns for Pesticides" appearing on pages 32, 33, 36 in the October 1960 issue of FARM CHEMICALS?

Very truly yours,
W. J. RICHARDSON
Manager
SWIFT AND CO.

RAINFALL MAPS

Monroe, La.

Could we purchase ten copies of the Rainfall Probability Maps for each month, March through October? We would like to compliment you on publishing this series which we find very useful.

Sincerely,
NELSON D. ABELL
OUACHITA FERTILIZER
AND GRAIN CO.

COMMENTS ON "SALESENSE"

Blacksburg, Virginia

You have been sending me for quite some time each issue of FARM CHEMICALS. First, may I state how much I appreciate receiving this and not only thoroughly enjoy reading it but find it most helpful to me. The copies of FARM CHEMICALS are routed to members of the department and find here that our departmental members look forward to receiving them.

I have been particularly interested in reading the articles in your "Salesense Series." I am sure they would be most helpful to people in the industry, and I simply wish to say that they are also very helpful to us in the educational and research fields. The one in the September issue on "The Magic of Enthusiasm" is quite good. I am calling this to the particular attention of our folks.

Again, thanking you with best regards,
I am,

Very truly yours,
H. L. DUNTON
Head, Dept. of Agronomy
VIRGINIA POLYTECHNIC
INSTITUTE



The Management Triad

St. Louis 8, Mo.
Enclosed is our check for \$7.50 for reprints of the 15 articles checked on the enclosed coupon. Also I would appreciate rates on quantities of 100 or more copies.

Sincerely,
JACK NEAL
DOANE AGRICULTURAL
SERVICE, INC.

Pittsburgh 22, Pa.

Over the past several months FARM CHEMICALS has been running a series of articles on marketing under the title of "Salesense Series." Is it possible that you might have reprints available of the six articles that have appeared to date in this series? If so, it would be very much appreciated if you could provide us with about a dozen copies of each article. . . .

Very truly yours,
WILLIAM CARPENTER
Assistant to the President
PITTSBURGH PLATE GLASS CO.

New York 20, N. Y.

You've had another such darn good article in your June issue, that we'd like to order reprints again. Could you send us 200 copies of "Knowledge Makes the Difference" (pages 18-20)? . . .

Sincerely yours,
GORDON D. RAPP
WILDRICK AND MILLER, INC.

Moline, Ill.

Please send me all five articles on "Salesense Series" written by O. C. Merrett.

Thank you.
Sincerely,
ROY E. HARRINGTON
Manager, Product Development Dept.
DEERE AND CO.

Chicago Heights, Ill.

If possible, I would like to get six reprints of each of the four articles by O. C. Merrett on "Salesense Series."

Thank you.
Sincerely yours,
DAVE F. WALKER
Sales Manager
RIVERDALE CHEMICAL CO.

Savannah, Ga.

We would like very much to obtain 65 copies of two articles which appeared in the October issue, Volume 123, No. 10 of FARM CHEMICALS, provided we can get them promptly.

They are "Don't Play with Price" on pages 16, 17 and 18, and "Credit Training for Dealers" on pages 22 and 24. . . .

Very truly yours,
H. J. SUTCLIFFE
Assistant Secretary
SOUTHERN FERTILIZER
AND CHEMICAL CO.

Salinas, Calif.

Will you kindly forward us ten reprints of your article "Organize your Time" which appeared in the August issue of FARM CHEMICALS?

Yours truly,
W. M. HOWARD
J. F. SLOAN CO.

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Wet Process Acid of Highest Quality
52-54% P_2O_5
Solids less than 1% by weight

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WASHINGTON VIEWPOINT

F
C

- ▶ *What will a change in administration mean to the farm chemicals industry?*
- ▶ *Current lag in the national economy is not expected to affect farm economy*

Perhaps the biggest question confronting the farm chemicals industry as this country heads into a change in federal government administration is: What will it mean for sales of fertilizer and pesticides over the long haul? The answer to this question actually turns on another: What will actually be done about farmers' propensity for producing surpluses? There's no question that industry plans for the future must hinge on the answer to the latter question.

From all we can determine, the answer is that current levels of production WILL NOT be cut back as sharply as you might think from the various studies of the subject and the candidates' stated positions. Under neither candidate—Nixon or Kennedy—will production be reduced by any large margin.

Nixon's position is clear on this: He would rely on voluntary retirement of land to eventually, repeat eventually, bring production in line with demand. By the time production might be reduced, and this would take several years by definition, population growth at least would demand production higher than current levels.

Kennedy's position is the one which indicates that an immediate sharp curtailment of production of such things as cotton, wheat and feed grains would be undertaken. Curtailment, again, would require several years to be made fully effective. It would be through controls on sales of farm products, not on acreage alone. Before such controls were imposed, however, they must be authorized by the Congress, and then put to a vote of the farmers affected. Here, again, the time factor is in favor of continuing high production. Increase in population is expected to demand an increase in farm supplies of roughly 2 per cent a year.

Rise in population should not be underestimated in the new situation coming. Neither, of course, is it safe to over-estimate. However, over the past few years, farmers have produced a total excess of farm commodities of roughly 7 per cent. Some respected economists figure that if production can be held at the current record levels, in at least four years farm production will be close to the level of annual requirements. Important to note that this assumes stabilizing farm production at current levels—holding it where it is—and not cutting it back sharply.

But population is not alone in working in favor of continuing total farm production at current levels for the next few years. One of the hidden bulwarks to the farm chemical industry's farm business is the price support program. Consider for a moment the

importance of \$4 billion worth of price support money poured into the hands of farmers through the support program's loan and purchase agreement operations.

While most of this is in loans made to farmers by the government (on commodity collateral), it is hard spendable cash when farmers take out the loan. Most of it is never paid back to the government, which then takes ownership of the commodity collateral. The farm chemicals industry and others in the farm market might well consider the consequences of suddenly drying up \$4 billion of spendable farm income in a single year.

Another major aspect pointing to continuing production at high levels is what is called the foreign situation. It is highly significant that both presidential candidates stress food as a potent weapon to be used in the cold war against communist economic pillaging. Both promise to use food—not only surpluses—to feed the world's hungry. Kennedy goes so far as indicating he would canvas world needs and count that in on the goals for American farm production. The possibilities inherent in this idea are staggering.

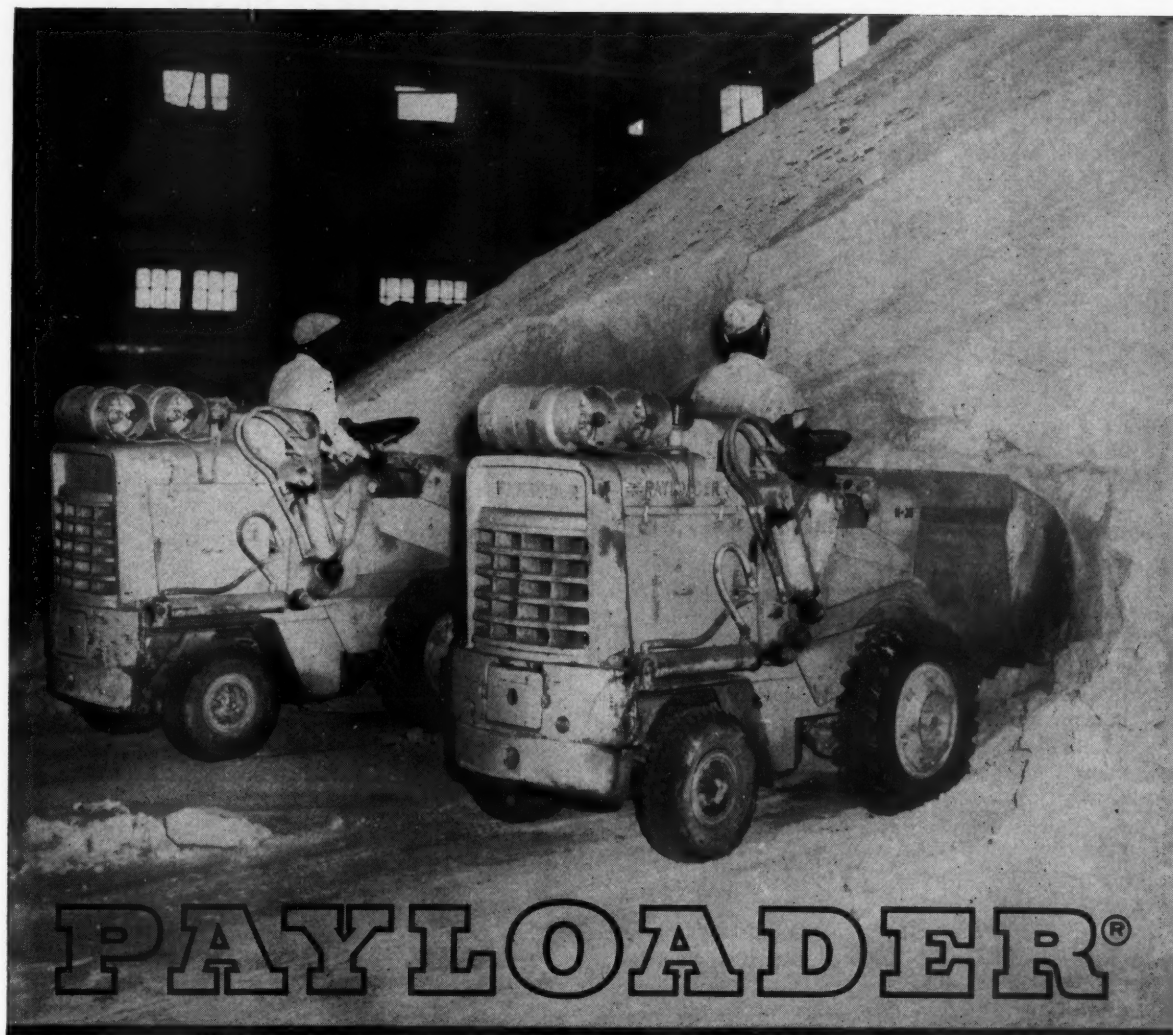
There is reason to believe that Nixon would undertake a somewhat similar program.

So what? The conclusion that is drawn from all this is that (1) total farm production will not be curtailed below current levels, and, in fact, (2) farm production may even be increased—and through government encouragement—in the immediate years ahead. Despite all the public gnashing of teeth over the huge surpluses, we, in essence, believe the future is extremely bright for the farm chemicals industry.

Still—a note of caution: All this does not necessarily mean that there won't be serious adjustments made in the farm plant. Adjustments inevitably will be made, either gradually under the Nixon approach, or through government prodding as under the proposed Kennedy plan. There is little doubt that wheat production will be reduced somewhat, but production of some other crops is likely to be increased. Soybeans, for example.

Agriculture, furthermore, is likely to settle down into specific areas of production. Wheat, for example, will be produced only in those areas which can produce wheat best. And cotton: Further shifts into western irrigated lands is probable. This doesn't mean production curtailment in total, only shifts from uneconomic areas to economic production areas. And this type of shift means corresponding shifts in operations for industries working in agriculture.

Turn to the current recession—and its effect on farm business. The current lag in the national econo-



"Model H-25's are real producers ...

and have proven to be dependable on continuous operations", says C. L. Williams, Plant Supt. of Gulf Fertilizer Company, Tampa, Florida. "The maintenance on our two H-25s has been lower than on any loader previously used. We find the quick tip-back bucket action gets capacity loads without real strain on the loader, and delivery speeds are fast. We also save on tire wear with the power-shift transmission."

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way."

What's Coming Next Month

It's meetin' time in the farm chemicals industry!

And if we had another name for this column we'd be tempted to call it "Nostalgia" this issue.

We can't help but think back with a great amount of pleasure to the closing months of 1958. We were about to launch the *new* FARM CHEMICALS and such gatherings as the NAC meeting in Savannah and Fertilizer Round Table in Washington, D. C. served us well as we tapped opinion concerning our coming move slated for January 1959.

Even before our christening of the new era in farm chemicals publishing we began getting letters about the marketing emphasis we had planned.

Has the new idea been a success? Best answer to that is to read the *Letters* section each month. We welcome the warm response that continues unabated. This "flow" seems to have turned into a "gusher" since we instituted Merrett's "Salesense" series several months ago. Next to letters, however, there's nothing like *personal contact*—and we'll be getting plenty of that this month, starting with

■ FERTILIZER ROUND TABLE

We'll bring you a report on this outstanding "round-up" of what's new in fertilizer manufacturing next month.

■ FERTILIZER SOLUTIONS MEETING

This month's "big meetin' in the South" promises some real interesting reports of the fast-moving solutions industry. FARM CHEMICALS will be there to bring you the facts.

■ MARKETING SEMINAR

For the second straight year, FARM CHEMICALS will stage FCMS in New York City. You still have time to make a reservation, by the way. Dates: November 15-16. (Be sure to read page 30 this month!)

... in the new

FARM **EPA**
CHEMICALS

WASHINGTON VIEWPOINT

my, first, is not expected to be severe—more of a hesitation than a genuine decline. Outlook is that it will last into at least the second quarter of 1961. Much of the hesitation, although by no means all, is due to the uncertainties attending the presidential election.

It is not expected to affect the farm economy. As a matter of fact, farm economists expect agriculture to go counter to the national trend during the year ahead. Thus, they look for a repeat of what happened during the 1959 national recession. During that period, agriculture was the single major industry which enjoyed boomtimes with income soaring 15 per cent above the previous year. While the rise in the coming 12-month period may not match the 1958 rise, outlook definitely calls for a reasonably strong uptrend.

Farm economy is moving from a solid base, despite many claims to the contrary. It is highly significant that farm net income has stabilized in the narrow range of \$11 to \$12 billion during the past six years—with the single exception of 1958 when it increased almost \$2 billion. This generally ignored stability is the more surprising in view of the rather steep increases in production expenses over the past six years. Farmers thus were able to increase their gross take to offset the increased production costs and maintain their net at a constant level.

Who will be the next Secretary of Agriculture?

As has been demonstrated by Secretary Benson, the selection of the next secretary will be of paramount importance in farm policy for at least the next four years. Neither candidate has as yet made a definite selection, but here are some educated guesses on the subject:

If a President Nixon: The next secretary very likely will be drawn from the ranks of the Land Grant Colleges. He will be an advocate of greater free enterprise in agriculture and of gradually getting the government out of farming. He will believe, essentially, in the things Benson believes in, but will have the distinguishing characteristic of a feel for good farmer public relations. Man most frequently mentioned as Nixon's choice is Henry Ahlgren, associate director of extension in Wisconsin.

If a President Kennedy: The new secretary will be a youthful and successful politician from the Midwest. In other words, Kennedy's choice is expected to be a politician first and an agriculturalist second. The man who will get first crack at the job is Sen. Hubert Humphrey of Minnesota. Kennedy relies heavily on Humphrey's advice on farm matters during the campaign. Humphrey is up for re-election to another six year term in the Senate and looks like an easy winner. In view of his re-election prospects, Humphrey is expected to turn down Kennedy's invitation. But Humphrey may well have the deciding voice as to who finally gets the job. Kennedy's farm theoretician, Dr. Willard Cochrane of Wisconsin, is frequently mentioned for the top spot, but odds are he will get the job of undersecretary to a political-type top man at USDA.



①—a famous symbol of dependable quality in many packaging fields . . . glass and plastic containers, corrugated boxes, and multiwall bags.

Lambert Hitchcock was the first large-scale manufacturer of furniture in America. The skill and quality which went into his designs have lived for 150 years, as is represented by the famous "Hitchcock Chair."

Think of the maker when you buy any product . . .
It pays to buy bags from a packaging specialist!

So much more than just the ability to produce it must be considered when you buy any manufacturer's product. It must be backed by experience, to assure you that the product is properly designed to fit its specific uses . . . by dependability to assure you of exactly what you want, when and where you want it . . . and, of course, by quality.

Owens-Illinois, through its leadership in many fields of packaging, can help you in all your multiwall bag requirements—the *right* multiwall bag for every packing, handling, storage, and shipping method.

For full information, write to Owens-Illinois, Multiwall Bag Division, Toledo 1, Ohio



MULTIWALL BAGS
 AN ① PRODUCT

OWENS-ILLINOIS
 GENERAL OFFICES • TOLEDO 1, OHIO

TROUBLE-SHOOTING



IMC Technical Service solves fertilizer industry problems in the office...in the plant...in the lab...in the field.



From the files of IMC's Technical Service comes this case history that illustrates the range of IMC's concept of technical service—creative technical assistance that begins at the ground and continues through every phase of production.



From disaster, a sheaf of marketing, labor and manufacturing data emerges to guide IMC planners and local plant officials in reconstructing facilities to match potential.

G your toughest problems

IMC tech service reps are trained, equipped, dedicated to solving hundreds of manufacturing problems each year. They're men on-the-go, interested in serving you better!

Your IMC tech service man knows what an inaccurate meter calibration can cost you . . . he knows and understands the importance of peak production throughout the rush season — and that a plant shutdown of only a few hours can cut heavily into your year's profit. He is a fertilizer man by experience and training. He has the know-how to pitch in and help — not only in the problems that occur, but also in seeking out and preventing trouble before it happens. Here's how IMC tech service has helped just a few customers:

Ontario — Subject company was starting up a new plant. IMC's Johnson and Franklin assisted in the original installation of equipment. The plant was put on stream and the customer went into immediate continuous production using IMC's formulations.

Florida — Subject company requested help in the granulation of X-O-X grades using Sul-Po-Mag. Mr. Causey was dispatched to assist in the proper production of this product.

Arkansas — Subject company was almost completely destroyed by fire. On Monday, IMC Technical Service was requested to assist in engineering and rebuilding the plant. On Friday, Mr. Robert Heck presented the customer with completed preliminary layouts.

Iowa — Subject company requested immediate engineering assistance for construction of a second shipping mill including simultaneous operation of bagging fertilizer and loading bulk trucks. IMC's De Long, with the assistance of IMC engineering, prepared completed drawings for this installation in one week's time.

Use the extra knowledge, the new ideas, the cost-cutting techniques which IMC can bring to bear. Your IMC technical service man concentrates on total service. Can he help you?

Now—Technical Training Offered to IMC Customers

Due to repeated requests from our customers, IMC has initiated a program on some of the most troublesome technical problems confronting fertilizer manufacturers.

Formulation, mechanization, maintenance and trouble-shooting are all part of this practical meeting agenda. Day-to-day problems and their solutions are currently being discussed in 11 cities throughout the country.

Plan to attend the IMC Technical Training Meetings—one of which will be close to your city. Check below for times and places.

CITY	DATE
Minneapolis, Minn.	Monday, Tuesday, October 24, 25
Indianapolis, Ind.	Wednesday, Thursday, October 26, 27
Baltimore, Md.	Wednesday, Thursday, November 9, 10
New York, N.Y.	Monday, Tuesday, November 14, 15
Raleigh, N.C.	Wednesday, Thursday, November 16, 17
Toledo, O.	Monday, Tuesday, November 21, 22
Winter Park, Fla.	Monday, Tuesday, November 28, 29
Montgomery, Ala.	Wednesday, Thursday, November 30, December 1
Kansas City, Mo.	Monday, Tuesday, December 5, 6
Tyler, Tex.	Monday, Tuesday, December 12, 13
Jackson, Miss.	Wednesday, Thursday, December 14, 15

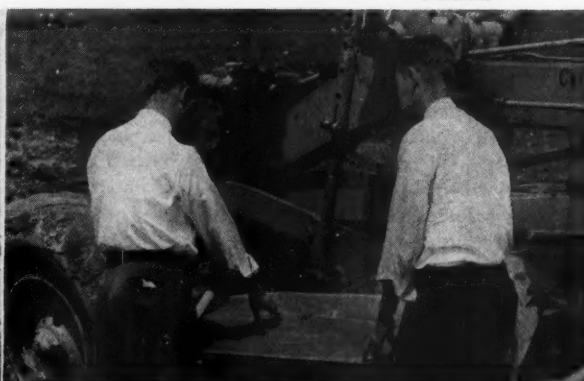
AGRICULTURAL CHEMICALS DIVISION

INTERNATIONAL MINERALS & CHEMICAL CORPORATION

ADMINISTRATIVE CENTER, OLD ORCHARD ROAD, SKOKIE, ILLINOIS, ORCHARD 6-3000



Translated into preliminary designs, this data is creatively interpreted into smooth-running production methods by IMC experience and made consistent with available building budgets.



In the actual construction, IMC technical personnel are "on site" to further extend technical aid, interpret intricate installations and define production and architectural ideas.

FO-3-01



letting objections shake you up

Seventh article in FC's "Salesense Series"

By O. C. MERRETT

HOW many times have I had a salesman say to me, "If I could only handle objections, I would be a top salesman"?

To the top salesman, an objection is a road sign to a sale. The objection tells us how the prospect wants to be sold. When the prospect starts giving us objections, we can be sure he is becoming interested. It's the fellow who just sits there and never says a word who is going to give us the most trouble.

Before we can successfully turn objections into sales, we should know everything there is to know about the objection.

There is the objection that can be answered . . . and the objection that cannot be answered. The objections that can be answered are the *Given* and the *Ungiven*.

Let's look at some types of objections you may get:

- | | |
|-------------|--------------|
| 1) Sincere | 4) Hearsay |
| 2) Trivial | 5) Test |
| 3) Hopeless | 6) Prejudice |
| 7) Put-Off | |

The *Sincere Objection* is the one we want . . . the real reason for the prospect's hesitation, e.g., "I am not going to buy anything I can't see." (Anhydrous ammonia.)

The *Trivial Objection* should not consume too much of our time, but may sound like this: "Every salesman who comes here says the same thing."

The *Hopeless Objection* is one that cannot be answered. The fertilizer salesman doesn't need to concern himself with the Hopeless Objection too often. The insurance salesmen are the boys most frequently confronted with the Hopeless Objection.

To illustrate the No. 1 Hopeless Objection, a prospect says, "I would like to have some insurance, but I have a bad heart and can't pass your physical."

The No. 2 Hopeless is the prospect who has applied for bankruptcy, is broke and has no way of borrowing the money to pay you.

The *Hearsay Objection* involves something derogatory your prospect has heard about your product, service, company, etc. For example: "I have heard that your fertilizer will make my ground too hard."

The *Test Objection* is one raised by the buyer who

knows our product about as well as we do . . . and wants to test our knowledge.

The *Prejudiced Objection* is one colored by past experience, e.g., "I wouldn't buy anything from your company! They fired my brother 12 years ago."

The *Put-Off Objection* is a means of trying to thrust the time of sale into the future: "Don't call me . . . I will call you . . . See me after election . . . Stop by next trip . . ."

In analyzing the objection, the salesman will find it most helpful to know what the objection is to. Most of the time we will find the objections are to one of the following: Price; Advertisement; Product; Time; Service; Personnel; Company; and Acting Now.

By way of illustration:

Price: "I can beat your price!"

Advertisement: "Your advertizing program is not adequate."

Product: "It smells too bad."

Time: "I don't have the time to make the change."

Service: "You don't deliver to the field."

Personnel: "I don't like your bookkeeper."

Company: "Your company is too large (or too small)."

Acting Now: "See me next year."

Now we know the type objections to expect and what the objections will be directed against. Next, we need to know where most objections come in our sales presentation.

If we check, we will find that most of our objections come in the *Approach*, the *Conviction* and the *Close*.

When do we answer objections?

- 1) Before they are given. Anticipate them!
- 2) When they are given.
- 3) Later in the presentation.
- 4) Never.

Following are examples.

Before They Are Given: "Mr. Farmer, some farmers hesitate using our fertilizer because they think it is more expensive, but as soon as they are shown that it actually is less expensive because of the labor and time saved, they start using it."

When They Are Given: Objection: "I have heard that you people are not too happy about standing behind your guarantee."

"You say you heard that, Mr. Farmer?"

"Yes."

"Are you sure they were talking about our company, Mr. Farmer?"

"I think they said your company."

"Do you mind telling me where you got your information? I would like to call them right now. I am sure there must be a mistake. May I use your telephone?"

Notice that it is important for you to say, "I would like to call him right now. May I use your phone?" By doing this, your prospect will see that you are sincere and want to get to the bottom of his hearsay complaint.

If you say, "Would you mind giving me his name. I would like to go see him," your prospect will think, "This will be the last of this. He will never go by, because he knows it is true."

Nine times out of ten, when you ask for the source of information and explain that you want to call right now, he will say, "No, I don't want to bring him into this." When he does say this, you should pull your evidence of proof that your company stands behind its guarantee and is happy to do so.

Later in Your Presentation: You may not be ready to answer your prospect's objection, and want to postpone it until later: "Mr. Farmer, you have asked me a sensible question . . . one that certainly needs answering . . . and I am going to answer, but first let me show you this . . ."

Never: Some objections are so trivial you are wasting his time and yours trying to answer them.

The best method we have found for getting around the trivial objection is to say, "I understand, Mr. Farmer," and then keep going with your presentation.

Some ways to answer objections are to Restate the objection; Ask why; Turn the objection into a question; Pad the answer; Capitalize on the objection and reverse it; Admit and explain; Deny; and Ask questions.

Restate the Objection: Suppose you know your prospect to be worth plenty, and he gives you the old, "I can't afford it now" routine.

Say, "Mr. Farmer, let me make sure I heard you. You *did* say that you can't afford this five hundred dollar application that will save you labor, time and money, didn't you?" Sometimes when he *hears* his own words, his objection sounds so ridiculous that he will say, "Oh, forget that comment."

Why?

This word has been over-worked and is despised by a lot of buyers. The reason for its overuse is that it is the only answer to objections that some salesmen have. How about trying this to see if it doesn't sound and work better? "Mr. Farmer, obviously you have some reason for wanting to put this off. I wonder if you would mind my asking what it is?" You are saying exactly the same thing . . . but in a different way.

Turn the Objection into a Question: Farmer: "If I started using your fertilizer I would have to buy an applicator."

Answer: "That does bring up a question, Mr. Farmer. Now your question is whether the labor, time and expense you will save by changing fertilizers will justify buying an applicator. That is your question, isn't it?"

What you are doing here is turning the objection into a question; so if he says, "Yes, that is my question," you may then proceed to answer it.

Right here you may want to ask me, "What if he says, 'No, that is not my question?'"

My answer to you is: You are not hurt . . . All you need do is ask, "Then, Mr. Farmer, what is your question?"

Pad Your Answer: You will never go wrong by padding your answer to every objection before you start answering it. By padding your answer, you will avoid antagonizing your prospect. Actually, what you are doing is agreeing with him without saying so.

Objection: "I want to think this over."

Answer: "I can certainly understand how you would want to think about this, Mr. Farmer, and while you are thinking, let me call your attention to one or two money savers . . ."

Then start selling more benefits.

Capitalize On, and Reverse the Objection:

When using this method, you try to capitalize on the reason your prospect gives you for *not buying* . . . and turn it into a reason *for buying* by reversing it.

Objection: "I think I will wait until next year . . . Maybe I will be in a better financial position by then."

Answer: "You know, Mr. Farmer, that might be just the reason you should buy this applicator now."

Farmer: "Why is that?"

Answer: "By this time next year, you will have saved enough money on time and labor to pay for your new applicator. Another most important reason for your buying this applicator is the money you will save on down-time."

Admit and Explain Away: Sometimes we have to admit our product or service is more expensive than our competitor's, and when we do, we should be able to explain why.

Objection: "I would like to do business with you, but you are more expensive."

Answer: "Yes, sir, we are, and let me show you the reasons."

"First, when you start using . . ."

"Second, you will notice, we . . ."

Deny: Once in a while we get an objection against our company, product or service that is not true. If it is not true, we must *deny* it. When denying an objection, make certain you let your prospect save face. When denying an objection, *be sure* you give positive proof supporting your denial.

Ask Questions: By using this method, we let our prospect answer his own objection.

Objection: "It's too complicated."

Question: "What seems complicated, Mr. Prospect?"

Prospect: "All those buttons."

Question: "Which button are you in doubt about?"

Prospect: "All of them."



LETTING OBJECTIONS SHAKE YOU UP

(Continued from page 15)

Salesman: "You know what the red button is for, don't you?"

Prospect: "To stop the machine, I suppose."

Salesman: "That's right . . . and the green one?"

Prospect: "That's to start it, isn't it?"

Here are two ways you might want to use to get back into your presentation after objections have slowed it down:

- 1) "Obviously, Mr. Prospect, there must be some reason that is causing your hesitation about starting our program. I wonder if you would mind my asking what it is?"
- 2) "As I understand it, Mr. Prospect, the basis for your hesitation is mainly that you are not certain you will receive your money's worth, isn't that right?"

How do we get the hidden objection out in the open? As you well know, we can't deal with an objection until we know what it is. There is a big difference between an *objection* and the *real objection*. Most of the time we are confronted with this problem when we receive an objection from the farmer. He states an objection, but doesn't state the *real* objection.

How about trying the following technique for getting the hidden objection out in the open.

- 1) Ask why.
- 2) Ask for other reasons, e.g., "In addition to that, Mr. Farmer, are there any other reasons for your hesitation?"
- 3) Meet his conditions.
- 4) Ask for the real reason, e.g., "Oh, I see. Then Mr. Farmer, there must be another reason causing you to want to hold up on starting our program. Would you mind telling me your *real* reason, Mr. Farmer? Maybe we can work something out for you."

- 5) Bury the *first reason* and answer the *real reason*. Following is an example of how this formula works.

Ask Why

Salesman: "Mr. Farmer, up until now you have acted most enthusiastic about our fertilizer, but for some reason you want to put this off. Would you mind my asking you why?"

Farmer: "It's just too much money."

Ask for Other Reasons

Salesman: "In addition to that, Mr. Farmer, are there any other reasons that might be causing you to want to put this off?"

Farmer: "No. That's it. Too much money."

Meet Conditions

Salesman: "Then, Mr. Farmer, if I could show you that it will not cost you money, but will save you

money, you would be ready to do business with me, wouldn't you?"

Farmer: "Now wait just a minute. I didn't say that . . . You are putting words in my mouth."

Ask for the Real Reason

Salesman: "Oh, I see. Then, Mr. Farmer, there must be some other reason that is causing you to hesitate. Would you mind telling me your real reason? Maybe we can work something out for you. (Attention, Mr. Salesman: Be kind and gentle when using this step.)

Farmer: "Oh, I hate to mention this, but I have an agreement with my wife that before I buy anything new or different, I will discuss it first with her."

Bury the First Reason—Answer the Real Reason

Now, you have his *real reason*, so bury the first reason he gave you, so he won't be able to kick you with it again; e.g., "I understand, Mr. Farmer. What you are saying is that the cost is not disturbing you at all. In fact, our cost is very reasonable. The thing that is bothering you is that you want to talk this over with your wife. Isn't that right?"

Farmer: "Yes, that's right."

Now you are ready to make arrangements to go with him to talk it over with his wife. (**Important**—It is important that you be there when he talks it over with anyone. *Don't* trust him to sell your product. No one should be able to sell your product as well as you can.)

The question you want answered arises in the number three step after you say, "Then, Mr. Farmer, if I could show you that it will not cost you money, but will save you money, you would be ready to do business with me, wouldn't you?" You want to know what to do if he should say, "Yes, I will do business with you if you show me how I will save money." Don't holler . . . you haven't been kicked yet; that is, if you can show him how . . . And if you can show him, and close the sale, you won't need the other two steps. ▲

FOR MORE FUN AND SALES

In summary, here are some things we have stressed that will help make your selling more fun, increase your sales and prevent antagonizing prospects:

- 1) Remember that the objection is the prospect's only defense. It's his sales pitch.
- 2) Let objections be road signs to a sale.
- 3) Be sure it is an objection, and not a question seeking more information about your product, before you jump on it.
- 4) Be able to analyze the different objections.
- 5) Know what the objection is against.
- 6) Know when to answer the objection.
- 7) Learn to anticipate and answer objections before they come up. Do this by making a list of all the objections you have been receiving.
- 8) After answering an objection, get a commitment from your prospect that he has accepted your answer, e.g., "That eliminates all doubt on this particular point, wouldn't you say, Mr. Farmer?"
- 9) Get the hidden objection out in the open where you can deal with it.
- 10) Learn how to get back into the sale after interruption.



Morton Howell, Manager,
Fertilizer Division of
Pasco Packing Co., Dade
City, Florida.



Manufacturing flexibility is the outstanding feature of this advanced mixing plant built by the Fertilizer Division of Pasco Packing Company. With the assistance of

Spencer Tech Service, many original innovations were incorporated in the design. Read (below) about the valuable technical help you can get from Spencer:

Pasco Packing Co. Designs Specialized Plant With Help Of Spencer Tech Service

Solving problems for fertilizer manufacturers is the job of the experienced Spencer Tech Service team. When Pasco Packing Company designed its new plant for granulating citrus blends, Spencer Tech experts were on hand to assist. Together, they developed ingenious innovations for processing a wide variety of raw materials into grades which can include all minor elements and up to half nitrate nitrogen.

Because they are specialists in plant engineering and keep up to date on the latest manufacturing processes,

Spencer Tech Service men can often suggest efficiencies for improving production and lowering costs.

Mixers also profit from the continuing research being done at Spencer's pilot fertilizer mixing plant. As a prime supplier of nitrogen to the industry, Spencer makes reports of all experiments available to every manufacturer. Whether you use SPENSOL GREEN or not, you can obtain copies by writing to Spencer at the address below—or if you would like help on a specific problem, just contact your Spencer representative.

How SPENSOL GREEN Cuts Your Corrosion Costs In Half:

Laboratory tests of competitive ammoniating solutions show:

Sample Number	Corrosion (In. Per Year)	Variation From SPENSOL GREEN
Brand A	.021	91%
Brand B	.024	118%
Brand C	.300	2,630%
Brand D	.022	100%
Brand E	.234	2,030%
Brand F	.017	54.5%
Old SPENSOL	.017	54.5%
SPENSOL GREEN	.011	—

Save repair costs, parts, and down time by doubling the life of your equipment with non-corrosive SPENSOL GREEN!

Insist on

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NON-CORROSIVE AMMONIATING SOLUTIONS



Spencer Chemical Company
Dwight Bldg., Kansas City, Missouri

Sales Offices: Atlanta, Ga., Chicago, Ill., Memphis, Tenn., Omaha, Nebr., Kansas City, Mo.
Works: Pittsburg, Kans., Henderson, Ky., Vicksburg, Miss.



Above are M. S. Williams, The Sulphur Institute; Rod Zilenziger, Farm Chemicals; A. C. McCall, Davison Chemical Co.; Graham Campbell, Bennett and Clayton; J. W. Carroll, Chamberlain and Barclay; M. Stambaugh, Armour Agricultural Chemical Co.



Talking together in the above photo are: F. N. Strudwick, Ted Smith and Dick Bunting (at right), all of William B. Tilghman Co. and Bob Philips, Farmers and Planters Co.



The four men pictured here are all Milford Fertilizer men: F. L. Reed, H. C. Jump, R. A. Fischer, and L. E. Tribbett.

Northeastern Fertilizer Conference at Hershey



The three men shown here are Ralph E. Fraser, Summers Fertilizer Co.; A. A. Schulz, Reading Bone Fertilizer Co. and J. C. Crissey of G. L. F. Exchange, Inc. The latter two are retiring soon.

NON-FARM use of fertilizer was the major topic of the annual Northeastern Fertilizer Conference held at Hershey, Pa. last month. Attended by 183 persons, the conference also stressed merchandising.

C. R. Skogley of the University of Rhode Island reported that present non-farm consumption of fertilizer is about 200,000 tons. He added that only about one-tenth of the 20,000 acres along New Jersey's highways are fertilized. He was not optimistic about the progress being made toward more highway fertilization.

Dr. J. C. Harper of Penn State emphasized the value of soil tests, adding that the type of fertilizer is not critical—especially nitrogen—as long as rates and frequency of application are carefully followed.

Discussing the agronomic approach to selling fertilizer, C. F. Winchell, Consolidated Rendering Co., said that companies should strive to put "sound agronomic support" behind their advertising claims.

A. E. Buter, Nitrogen Division, Allied Chemical Corp., pointed out the importance of a perfect lawn as a "status symbol" and that companies should establish as many favorable images as possible for their products.

H. B. Sharer, U. S. Rubber Company, emphasized in his dynamic talk that "you should never tell a dealer that the merchandising brochures he receives

from the company are for *him*, but rather for his *customer* who can use it."

"Attitude makes the difference in selling," he said. "Product knowledge is an endless endeavor. But product knowledge alone does not make a man a salesman. He must possess a good sales personality."

Sharer emphasized that the salesman should never forget to be 1) friendly, 2) courteous, 3) helpful and 4) enthusiastic.

"Never treat a customer as 'one of the family.' He's a guest," Sharer added.

Dr. Hector (Don) Lazo, New York University, told the audience that a new marketing orientation is a must for the fertilizer industry.

"You don't sell fertilizer. You sell happy flowers," he said.

Following his talk (see article on page 20 of this issue), several questions were directed to the marketing expert. Asked how a small fertilizer company with limited personnel can apply the new marketing concept to his business, Lazo remarked:

"It's a matter of philosophy—thinking! This concept works for the small company as well as the large ones. But you must start by everyone on the team knowing about it."

Arthur H. Schultz, Reading Bone Fertilizer Co., and J. C. Crissey of G. L. F. Exchange, Inc. were recognized for their many years of service to the industry. They are retiring soon.

What you need to know about tanks for handling liquid fertilizers

This interesting report compares Stainless Steel to other materials commonly used for farm chemical tanks. It shows that Type 304 Stainless Steel tanks are corrosion-free and trouble-free for handling liquid fertilizers and other farm chemicals. Nozzles and screens don't clog, maintenance is minimum. The corrosion-free interior of a Stainless Steel tank is quickly and easily cleaned with a water rinse, eliminating any danger from contamination. It takes only *one* Stainless tank for all your liquid farm chemical jobs. Because it's free from costly maintenance and outlasts other materials, Stainless Steel actually costs less to own and operate. For a personal copy of this detailed report send the attached coupon.



United States Steel Corporation—Pittsburgh
American Steel & Wire—Cleveland
National Tube—Pittsburgh
Tennessee Coal & Iron—Fairfield, Alabama
Columbia-Geneva Steel—San Francisco
United States Steel Supply—Steel Service Centers
United States Steel Export Company
United States Steel



This mark tells you a product
is made of modern, dependable Steel.

United States Steel
525 William Penn Place, Room 6156
Pittsburgh 30, Pa.

Please send me a copy of "Corrosion in Liquid Fertilizer Equipment" (03097)

Name _____

Address _____

City _____ Zone _____ State _____

(please print clearly)

COORDINATED

Fertilizer Marketing in

By HECTOR LAZO*

Industry sales appeals have been "price, quality and service." They are good, "but not good enough" the author says. Marketing at a profit "demands establishment of a basic outlook or philosophy."

YOURS is an industry of tremendous growth and tremendous vitality. It is also an intensely competitive one. Research expenditures among your leading companies run from 2.5 to 5.5% of sales, far in excess of a majority of American industries. And a point of distinct interest, contrary to the usual pattern among American corporations, the larger your companies, the larger the percentage of sales allocated to research. The competition in your industry is getting keener by the day, because you not only compete against other companies that do the same thing you do, but you compete against ever new processes, ever new materials, and constantly emerging new products which could revolutionize your industry, literally, overnight.

But I submit to you that this remarkable record of research has been almost exclusively directed at new production processes, some new products, new production methods. The decade of the 1960's challenges you to find more, and *more profitable markets*, for what you already can make, for that 25% excess capacity you *now* have, for the marvels of the chemical lab which you know will cascade in ever-growing numbers from the backlog of research done by such companies as Allied Chemical, American Cyanamid and Monsanto, just to mention a few whose annual expenditures for research and development exceed \$10 million. Research is the heart of this billion-dollar industry, and research should make it possible for you to double if not treble your profitable volume of sales in the next ten years.

But it will not be all production and technological research, for you now know how to make more than you can sell. You have unlocked the secrets of nature, but you are baffled by the vagaries of the mere consumer! You are wise beyond your years in the lab and in the production plant; but the market has you stymied and many of you have fallen into the trap

* Chairman, Marketing Area, Graduate School of Business Administration, New York University. From an address presented before the National Plant Food Institute Northeastern Fertilizer Conference, Hershey, Pennsylvania, September 29, 1960.

g in the 60's

of price cutting as the answer to a baffling situation.

You will not reap the harvest of tomorrow by price cutting! You have known this right along, and don't need me to tell you anything about it. But perhaps I can make a contribution to your thinking, as an outsider, by taking a long objective look at you and your industry, and suggesting an area or two in which the dawn of a better day beckons to the unafraid.

Volume of Commercial Fertilizer

The use of commercial fertilizer has indeed increased spectacularly in the United States in the first six decades of the 20th century. You have gone from 3 million tons a year to 25 million tons, an eight-fold growth which has kept pace, year after year, with the growth of the nation as a whole. Your industry today accounts for 98% of all nitrogen used on the soil, in contrast with a bare 10% fifty years ago.

In the last 20 years alone, the American farmer has *doubled* his productive capacity. You are the reason for this growth, for you have supplied him the chemicals to enrich his soil, to extract from the tiring land more and more produce. In these same twenty years the number of chemicals available to the farmer has increased from 50 to more than 200, and fully 80% of the products you now furnish the American farmer did not exist in their present form, or did not exist at all, only 20 years ago.

Productive Capacity

You have also increased your productive capacity in undreamed-of proportions. In fact, the demand for anhydrous ammonia, although substantially increased, has not kept pace with your plant expansion. And so we find that while plant and equipment expenditures of the chemical industry have averaged well over one and a quarter billion dollars, year after year in the past ten years, your sales per dollar of gross plant have shrunk by over 30%. Your profit margins have declined from 10 to 30%. Something is radically wrong!

Your sales appeals have been and are today price,

quality and service. They are standard and they are good. But obviously they are not good enough. I do not advocate that you reduce your plant and equipment expenditures; far from it. But I DO advocate that you turn the coin and look at the other side, *the profitable marketing side*, without which all your plant, equipment and production could well be meaningless.

The Age of Marketing

Traditionally, business has been production-minded; and in order to keep going, it became also selling-minded. We had to get rid of the growing volume our plants turned out. So we placed emphasis on volume; volume of production to cut unit cost of production; volume of sales to keep pushing our production into the market.

Periodically we over-reached ourselves and were left with heavy inventories, declining sales, and sluggish markets. Traditionally, when these recurrent cycles have hit us, we have once more turned to the laboratory and to the engineer, to improve production, improve productive technology, to cut the costs of production.

In industry as a whole, we have maintained an average growth in productivity of 3% per annum, year after year; in the chemical industry this growth has been 6% per annum; and the farmer, too, has shown close to 6% annual growth, year after year, largely thanks to you.

But in distribution, in marketing—on the other side of the economic coin—*our growth in productivity has averaged less than 1% per annum.*

Currently, American industry is spending between 10½ and 12 billion dollars a year on research and development, technological research *in how better to make products*; but this same industry spends *less than one 25th* of that in improving our methods of profitably distributing these products! On all sides we hear the cry of the high cost of distribution. Congressional committee after committee delves into the fathomless mystery as to why the farmer should only get \$15 billion for all he produces, while the housewife pays a total of \$72 billion for what we eat, and another \$10 to \$12 billion for clothing made from farm products . . . giving the farmer perhaps 18 cents out of the total consumer dollar.

Why? The high cost of distribution! Reformers, some politicians, and some tongue-in-cheek charlatans cry: "Eliminate the Middleman!" Many of these know better; but many others are confused. Your own best customers, the farmers, want to know why things should cost them so much. And up to now the only answer we in industry and business have had is that our costs have gone up so much; we can't help ourselves.

That's precisely where I hope to come in. It is my firm conviction that we CAN help ourselves, but that we will never do it as long as we maintain our philosophy of production and more production, of volume and more volume, and of accepting as inevitable that we must have recurrent recessions, cycles of declining sales, declining profits, as part of the competitive system, the private enterprise system.

MARKETING

COORDINATED

Fertilizer Marketing in the 60's

(Continued from page 21)

That is a *defeatist* attitude and I repeat to you, the future beckons to the unafraid!

Currently you in the plant food industry have reached what is euphemistically called "a sales plateau." To be sure, you were some 10% ahead of 1958 in 1959, and this year you expect to sell just about as much as you did in 1959. But if we look behind those figures we find the shadow of the steel strike in 1958 seriously affecting production in at least one line, and the nation-wide recession during part of 1958 making up for the balance.

This plateau of sales has been reached in spite of the fact that you have increased your productive capacity year after year, and in spite of the fact that you are in a position to turn the wheels in your plants and turn out at least 25% more right now, without another cent being spent in more plant and equipment.

You also know that you have some 2,000,000 large family-owned commercial farms as your primary customers, and that these farms account for 60% of the nation's production; another 100,000 commercial operators, really farm corporations, account for another 25% of the production; so that 2,100,000 potential customers account for 85% of farm production. But there are still 1,000,000 small farmers, and almost 2,000,000 more part-time farmers. Together these two produce only 15% of the total output. Many indeed may be marginal farmers on their way out. I submit to you, however, that your chemical magic and the wizardry of your laboratory engineers could, *if you were properly organized*, double the productive capacity of these small farms and part-time farmers, save many of them, and thus help to keep the American dream alive. The greatness of the free world lies in the free enterprise system; and the very backbone of this system is, if you will, *the small man*.

Two Other Markets

But these three million small farms and farm residences are only one of the possible additional markets for your plant foods.

The face of America is changing in another most important respect. In the ten years just past, the decade of the 1950's, more than 14,000,000 people were added to the suburbs of our great cities, a growth averaging 3% a year or 30% in the ten years. This is three times the rate of growth within our large cities, and almost twice the rate of growth for the country as a whole. What is more, every section of the country has shared in this growth of suburbs, with the West continuing to show the greatest overall growth and the greatest rate of growth. The claim has been made that our nation has become an urban population, as farms decreased in number and increased in size. After all, today the American farmer produces food and fiber needs for 25 families besides himself—more than twice the productivity of only a few years ago. But our population, though becoming

urban, has not become citified; rather is it largely, and growingly, suburban.

One wag has actually said that America has gone from the farm to the city and from the slums to the suburbs. I will connect this with you and your potentials very shortly.

Traditionally, when seeking greater sales, the American businessman has had the choice of intensifying sales with his present customers; finding and cultivating new customers; or bringing out new products.

You have devoted your attention very largely to the first, trying to sell more plant food to your current customers, watching the traditional pattern of consumption maintained year after year—with the South Atlantic region taking more proportionately than any other region—although farming, like population, has shifted.

Shifting Sales Pattern

Your customers have shifted, and your sales pattern should have shifted. In the last five years alone, total population in the United States increased 7.5%; but the increase in Michigan was 10.5%, Colorado 14%, Arizona 23%, Nevada 22.5% and California 14.3% . . . virtually double the national rate.

People, people with jobs, create new markets. Has your marketing pattern followed these markets? By 1980 we will need 50% more wheat flour, 51% more milk, 51% more pork, 50% more beef, assuming consumption per person remains at the 1955-58 level. We shall need 40% more shoes and almost 50% more textile fibers because our growing population will demand them.

And that means that our farmers will produce them. What farmers? Where? With what help? Is it conceivable that the trend to the giant farm may be reversed and that some of the present so-called marginal farmers can become important contributors to the American of tomorrow?

What about the suburban growth? What does this mean to you? I submit to you that some of these suburbs have shown increases of from 75 to 150% in ten years, and increases of 40, 50 and 60 % are common everyday occurrences. Los Angeles, 82%; New York, 73.4%; Detroit, 79%; Cleveland, 65%; St. Louis, 51%; Minneapolis, 115%; Miami, Florida, 158%; Denver, 121%. And so on, and on.

Well, what of it? These are city dwellers, and you sell an industrial product. But do you? There are 54.6 million households in the United States at the present time; of these 47%, or more than 25.5 million, are located in urban and rural areas outside of the cities—25.5 million potential gardens which could use your products.

To be sure, many of you have made partial discovery of this very lucrative market. But very few of you have given the market any real thought, other than making your product available more or less to these 25 million householders.

At the General Motors plants a few years ago, employees were offered free reading material in the form of booklets in the so-called Reading Rack service. By far the most popular booklet, of which more than one-half

(Continued on page 24)

TANK CAR DELIVERY OF MOLTEN SULPHUR



Loading Tank Cars at
one of our mines

...an important phase of TGS Service

This is a service of interest to the rapidly increasing number of companies preferring to receive their sulphur deliveries in molten form so that they can transfer directly from cars into consumption. We are equipped now to deliver molten sulphur by tank car from all mines and recovery plants to any place in the country. Detailed instruction sheets and drawings are available on request for those in the planning stage or who do not have adequate or proper facilities for handling and storing molten sulphur.



TEXAS GULF SULPHUR COMPANY

75 East 45th St., New York 17, N. Y. / 811 Rusk Ave., Houston 2, Texas

Sulphur Producing Units: Newgulf, Texas • Spindletop, Texas • Moss Bluff, Texas • Fannett, Texas • Worland, Wyoming • Okotoks, Alberta, Canada.

COORDINATED

Fertilizer Marketing in the 60's

(Continued from page 22)

million copies were distributed, was a booklet on how to grow zinnias in a small garden!

I remind you of the fact that distribution of such literature is entirely optional with the employee. They TOOK over half a million copies of a booklet that could tell them how to bring some beauty into their otherwise drab surroundings.

To marketing men, and marketing-minded executives of all kinds, this is exciting and significant proof of the basic contention of marketing advocates: the product made for the consumer, and filling a need of that consumer, will be overwhelmingly accepted by that consumer!

MAKE "HOUSEHOLD UNITS"

And its application to you? To me it seems crystal clear. Make and package your product in HOUSEHOLD units, in HOUSEHOLD-CONVENIENT packages, styles and modifications, so that the universal urge of American families everywhere to grow flowers, to have a garden, can show the same results for the householders that you have shown for the farmers of the land!

Indeed, I see you going much farther. I make this simple prophecy to you: Within ten years you will have changed the name of your organization from National Plant Food Institute, to something much broader, much more far-reaching, much more meaningful in terms of the people of America, ALL the people of America, not just our nation's farmers.

I see your name perhaps something like the Land Development and Protection Institute, or the Soil Protection Institute of America, as you turn your talents and your ingenuity to needs of the land in all its phases, not just to feed the soil, but to protect the land and the products of the land, and to increase not only material production but the spiritual joy that the productive land gives to mankind.

In a growingly tense and insecure world, men and women turn to the soil, the only God-made thing of permanence on this earth; and to ancient yet ever-new, ever-miraculous rebirth of growing things to satisfy the hunger of mankind for true beauty and for everlasting truth. Only in nature do we find this; only the soil produces it.

The Marketing Concept and You

And so we come to the heart of my message to you: The time has come for your industry to reorganize its set-up, its thinking, and its method of doing business. You can no longer afford to remain production oriented. I care not whether you make phosphoric acid, synthetic ammonia, potash or what-have-you, the time has come when marketing at a profit demands of you the establishment of a basic outlook or philosophy which too few of you have as yet accepted. You do not make or sell a product, whatever that product

may be; you are in the business of solving a customer problem or satisfying a deep customer need. It is the market need and not your plant capacity that will in the years ahead dictate your production. And your starting point, once the philosophy has been accepted, is to turn to that market and *research that need*.

This same research will tell you that it is not likely we shall have a comparable growth of suburbs in this decade as we had in the last. We may only add another ten million families in these semi-rural areas around our cities. That would make 35 million families, 35 million potential gardens. To be sure, 35 million home gardens will not buy as much tonnage as 2 million commercial farms. But research invites you to see what some other industries have done to turn industrial products into consumer profits.

Look at the food industry! General Mills is primarily a commercial, industrial flour and feed producer. But to 50 million homes, General Mills means Betty Crocker—means cake mixes—easy and delicious desserts—packaged in convenient packages—ready to turn into joy and satisfaction at the family table. Does Betty Crocker sell flour or feed? No! She sells joy, she sells satisfaction for that something sweet the family craves after dinner—wholesome, nutritious satisfaction, the icing on the cake. Or take the petroleum industry. The American public today spends 26.5 cents out of every discretionary spending dollar for transportation. Do you buy gasoline and oil when you step up to the Esso sign? No! You buy Happy Motoring. You buy a ride into the country, a visit to the city, a picnic, a vacation. Twenty-six out of every 100 cents spent as the public wishes . . . for joy for satisfaction, for relaxation.

And so it will be with your products. You are not going to sell fertilizers, you are not going to sell even plant food. You will sell zinnias in August, poppies in the fall; you will sell bigger and prettier chrysanthemums, easier to raise. You will sell smiling flowers to 35 million flower lovers.

But, if you organize properly for coordinated marketing, you will do more, much more.

Coordinated Marketing Defined

Coordinated marketing means that, for the first time in modern corporate organization, market research, sales, advertising and promotion, product planning, and therefore research and development will all be partners on the same team. It means that product development will start with marketing . . . will start with determining the demand or customer need . . . with a study of the customer problem, and the product to be developed. It will be *promoted and sold* as the result of total teamwork aimed at having the entire company working together to solve the customer problem, working together to meet the customer need, to supply that wanted customer satisfaction.

No longer will research and development be an isolated island of secrecy somewhere in the dark corners of the plant, nor even in the classified areas of the marvellous new research center. It will be an active, dynamic working partner of product planning, of marketing research, of market development, of field sales, of advertising; yes, of production scheduling, of in-

ventory control, of warehousing and of course distribution. They will all be *planning together from the very start*. No false starts and no secret developments kept from the sales and advertising staffs until, like Houdini, we pull off the wrappers and find a new hormone-building rabbit magic.

After the idea is received or conceived, it will be examined. Does it fit into our line? Can we make it? If so, and above all, is there a demand for this, actual or potential? How do we know? If we do decide to go into this, what must product planning and development do to coordinate all the planning and programming activities of the company?

What must purchasing do to have the necessary materials and supplies ready when needed? How about engineering, with specifications that will meet customer needs and still permit us to make this at a profit?

What about plant management, with their schedules, their runs, and their equipment needs? What about field sales with their plans for coverage and cooperation with the dealers? What about advertising and promotion, with their pre-planned and carefully prepared messages, for dealers, for customers, for consumers?

Product planning and development, a part of the newly-organized marketing department, will coordinate all this. It will see that every segment of the business knows what it needs to know in order to prepare ahead of time its share of the total, as a second baseman who covers the area between first and third, and part of the short outfield; or the catcher who gives the signals and covers home plate, but also backs up the first baseman in a close play, covers that ever-dangerous bunt, and throws to the pitcher covering home plate to prevent a steal from third.

New Organization of the Future

You will need to study the type of organization you have, and what changes need be made in the light of your customer orientation—changes in the company set-up, in your methods and policies, in your programming, in your buying and manufacturing, in your warehousing and distribution, in your channels. Some of you indeed will find that the distributor can be of immense help to you, can help you cut down the cost of distribution. And as you upgrade your products and your methods to reach closer to the ultimate consumer, you will find that the distributor and dealer, far from being the parasite professional reformers and misinformed critics would have him, can be your right hand man in getting the products wanted by customers to the hands of the users cheaply, effectively, and with safety and profit to all concerned.

The products of your industry have become not only vital but indispensable to modern life. National security could not exist without you. National production would be crippled without you. National survival may indeed depend upon you. As more and more natural resources become exhausted, your industry will step in to fill the breach, and with greater assurance, greater knowledge and greater safety, perhaps also greater economy. Your industry today is fifth largest among the nation's manufacturing groups

and destined in the immediate years ahead to rise higher and higher. You are diversifying into many new fields, have revolutionized many that you have entered, and have become the nerve center of hope for a healthier and happier world of tomorrow.

This, and more, is within your grasp. This, and more can be and will be yours, if you meet the challenge before you. And this challenge, in simple terms, means that you accept the fact that your job is not making products, but making profitable customers, that you are in the business of making healthy crops and happy gardens, and not fertilizers or plant foods. It means that you will turn the coin to the other side and make all your management decisions, your production decisions, your purchasing decisions, your research and development decisions—yes, even your personnel decisions—on the basis of *what your customer needs from you*.

The Market is There and Waiting

The market is waiting. The market is there. As a nation we have passed, for the first time in the history of the world, the half-trillion dollar economy. The purchasing power of the American consumer today is running at over \$400 billion and personal consumption expenditures at over \$300 billion. Only a few years ago a Louisiana politician tried to make himself the dictator of our land on the basis of a promise of a \$2,500 yearly income for *every family* in America. This year, the *per capita* income is running close to \$2,000 and the *per family* income is over \$6,000 a year.

The discretionary buying power of the people of the United States now runs to over \$120 billion dollars a year. Thousands, tens of thousands of products will go into an exchange for those millions and billions of dollars Americans want to spend. But they want satisfaction, they want happiness, they want convenience, beauty, and joy in return. Properly organized, your company philosophy and set-up will study which ones of those products you can best make and market—and then let the cash register do the rest.

So, I come back in closing to a statement made at the beginning. The highly seasonal character of your industry today bunches perhaps as much as 70% of your sales into the three spring months. Of necessity your plants must have long periods of idleness or of part time production; you must make for inventory and take the risk of heavy losses. You need to find the products that America wants and would buy from you so that your plants can be put on a normal 12-month production basis. This can happen only if you have a 12-month market demand.

You will do this when you no longer sell fertilizers, when you no longer sell plant foods. You will do it when you make and successfully market to the farmers and the homemakers of America, healthy plants and happy gardens.

This will happen when you sell, not P_2O_5 , but happy flowers; when you sell, not K_2O , but happier living.

The decade of the 1960's beckons you forward. The future belongs to the organized marketer who plans to solve customer problems. But above all, the future belongs to the unafraid. ▲

MERCHANDISING AIDS

PROMOTION

"How we measure PROFITS"

*First rule every dealer must learn is
separate goods handled into merchandise
divisions—and keep them separate all the way
through to the building of the P & L Statement.*



IS EACH department in your business bringing in all the sales it should—considering the potential in the market? Are you carrying too much inventory for the amount of sales you're getting? What is your *gross profit per dollar of inventory*—and what does that figure really mean to you?

These are only a few of the questions your dealers should be able to answer, if they are to *measure profits* accurately. They should have some sort of guide to tell them how they're doing.

Murray C. Renick, manager of Rolla Feed Mills, Rolla, Missouri, knows how to measure profits. You'll remember that in our July issue we listed the tools that he used for profit planning:

1) Survey the market, 2) departmentalize the farm store, 3) monthly profit and loss statement, 4) route sheets for outside retail salesmen, measuring against previous sales, 5) route sheets for wholesale salesmen, enabling management to measure costs of all items sold, 6) truck records, 7) incentive plans, 8) aging accounts, 9) credit control, 10) testimonial ads in newspapers, 11) cooperative advertising, 12) regular training meetings with employees.

DEPARTMENTALIZED BOOKKEEPING

Let's start with departmentalization. Note the "Analytical Report" on the next page. You'll find that Renick has *departmentalized* his bookkeeping system. It means simply *separating goods handled into merchandise divisions and keeping them separate all the way through to the building of the profit and loss statement*.

Renick's departments are 1) grain, 2) chows, 3)

flour, sugar, meal, 4) wire, twine and rope, 5) raws, 6) manufacture, 7) farm supplies, 8) seed, 9) fertilizer and 10) miscellaneous.

He can take one look at the report on the next page and determine if each department is profitable. Without this system he would have only *one figure* for "gross profit" and only one "gross profit rate." He wouldn't be able to tell whether it was good or bad.

It would be like adding apples and oranges together and that just can't be done!

Taking a look at Renick's Profit and Loss Ratios, we see that his bookkeeper has conveniently computed for him the 1) *overall gross profit rate* PLUS the breakdown by departments, 2) the *overall inventory turnover rate* PLUS the breakdown by departments, 3) the *gross profit per dollar of inventory* for the business as a whole PLUS the breakdown by departments.

THE KEY TO PROFIT

"What's the key to making a profit in fertilizer or anything else? Learn how to measure each operation!" Renick says. "Personally, I don't see how a dealer can run a small business today without using these measuring devices—particularly this thing we call departmentalization."

"Develop a *technique*," he insists, "and stick by it. Then after a number of years of watching all the changes in your operations, you can study and compare the figures with the various factors that come into play to produce these changes."

"Some merchandise will turn over 10 to 20 times or more a year. You don't want to throw this together with material that will turn over only 3 or 4 times a year," Renick explains.

PROFIT AND LOSS RATIOS

Departmental Detail

ANALYTICAL REPORT

Departments	(1)	(2)	(3)	(4)	(5)	(6)		(7)		(8)
	Sales	% of Total Sales	Cost of Goods Sold*	Gross Profit	Closing Inventory	Gross Profit Rate		Inventory Turns Yr.		Gross Profit per Dollar of Inventory
						Actual	Norms	Actual	Norms	
Grain	\$103,078	17.6%	\$85,515	\$17,563	\$ 2,215	17.0%	5-10%	38.6	Seasonal	\$7.93
Chows	106,733	18.3	89,967	16,766	4,144	15.7	11-15	21.7	15-25	4.05
Flour, Sugar, Meal	42,397	7.3	37,852	4,545	2,819	10.7	10-15	13.4	5-10	1.61
Wire, Twine, Rope	27,087	4.6	20,818	6,269	9,642	23.1	25-30	2.2	3-5	.65
Raws	61,041	10.4	43,079	17,962	4,205	29.4	10-15	10.2	5-10	4.27
Manufacture	60,134	10.3	48,917	11,217	606	18.7	—	80.7	—	18.51
Farm Supplies	33,573	5.7	27,289	6,284	7,860	18.7	25-30	3.5	3-5	.80
Seed	71,481	12.2	51,505	19,976	5,863	27.9	15-20	8.8	Seasonal	3.41
Fertilizer	49,844	8.5	41,153	8,691	9,306	17.4	5-10	4.4	Seasonal	.93
Miscellaneous	12,974	2.2	11,204	1,770	1,005	13.6	—	11.1	—	1.76
Total Business**										
All Departments	\$584,994	100.0%	\$498,026	\$86,967	\$47,668	14.9%		10.4		\$1.82

*Does Not Include Freight.

**Because one department was deleted from this form, the "Total Business All Departments" does not "add up" as shown.

Note on Cols. 5, 7, and 8—Are the closing inventory figures in Column 5 typical of the inventory throughout the period? If so, figures in columns 7 and 8 are meaningful. If not, it will be necessary to make allowances in interpreting them.

Note on Col. 8—Figures in this column can be very useful if closing inventory is typical, but care should be used in interpreting them. Remember figures relate only to Gross Profit and not Net Profit (no Expenses being taken into account); also figures are based upon investment in Inventory only and do not take account of any other investment necessary to maintain the department. (No figures are shown when department is highly seasonal or has negligible inventory.)

Note on Norms—The Norms given indicate typical successful experience for well-rounded Farm Supply Stores. Deviation may frequently occur as the result of local conditions, the particular combination of items in the department, etc. These Norms should be valued for general guidance only and should not be considered as a perfect measuring stick for any individual business.

He said that he's turning fertilizer only 4.4 times (see departmental breakdown). But notice that he turns grain 38.6 times and "manufacture" (his own dog food business) 80.7 times!

Obviously, fertilizer is not paying its way. With departmentalization, he can analyze the situation. He knows that if he is to get a good sales volume *in proportion to investment*, he must try to improve this turnover rate.

\$1 PROFIT FOR \$1 INVENTORY

Renick says that each department should bring in at least one dollar gross profit per dollar of inventory. But notice that his fertilizer figure is \$.93. Reason: at inventory time he had a fairly large supply, \$9,000 worth, of fertilizer on hand.

Lowering prices would only aggravate the situation. If anything, he should raise his prices.

However, Renick knows that profits are the result

of the interrelation of sales, volume, gross margin, and expense. Thus, pricing may *not* be the answer!

THE ROLL OF TRUCKING RECORDS

Now here is where Renick's trucking records, route sheets, incentive plans, and other tools play important roles.

He knows that his tractor-trailer actually made \$170 last year. Also, he figures that it cost 22 cents a mile to operate the 17-ton trailer.

How much better off this wide-awake dealer is than many hard-pressed dealers who don't even know the facts of their business—dealers who are operating under false illusions.

Help your dealers establish a profit-measuring system! It will pay off for them, and you'll also profit in the long-run by keeping them in business.

We'll bring you more on this subject of measuring profits next month. ▲



Tomasek, vice pres. and Ferguson, pres. of NAC.

*NAC President Vernon told the convention:
"The factual evidence is on our side. We
should welcome any opportunity to tell our
story."*

Let's talk pesticide b

THE public must be reassured of the importance and safety of agricultural chemicals lest current concern of their use stifle research vital to the nation's agricultural progress, members of the National Agricultural Chemicals Association were told at Coronado, Calif. during their Sept. 27-29 meeting.

Association President Jackson V. Vernon, speaking before the organization's 27th annual meeting, urged the industry to step up its discussion of the benefits and proper use of agricultural chemicals before civic groups and through public symposia.

Mr. Vernon said that impartial scientific and public bodies have found that pesticides are necessary to protect the nation's food supply and public health and can be wisely and safely used.

"The factual evidence is overwhelmingly on our side," he stated. "We should welcome any opportunity to tell our story. When and where we've had the chance and done so, we have never regretted it."

Billion Dollar Sales Forecast

Forecast of agricultural chemical sales of a billion dollars (at the manufacturer's level) by 1975 was made by Mr. Vernon, who is a vice president of Food Machinery and Chemical Corporation. Present annual industry sales are judged at over 280 million dollars at the basic manufacturer's level.

Despite significant improvements in control methods, Mr. Vernon reported, pests destroy an estimated 13 to 15 billion dollars worth of crops each year. Combined with

a rapidly growing population and shrinking farm manpower, he said, they present problems that will eventually create a serious national food shortage unless food production can be increased at better than past rates.

"The projected shortage of the nation's food supply must be made up by even greater technological and scientific progress," he declared. "Developments in the agricultural chemicals industry will most certainly be vital in this effort. The vigor with which we tackle this challenge will determine in no small degree the state of America's food supply fifty years from now."

Chemical Contribution

"Pesticide chemicals have contributed about half of the 35 to 50 per cent increase in farm productivity that gives us our abundant, safe and high-quality food and fiber," said Dr. A. M. Boyce.

Boyce, who is director of the University of California Citrus Experiment Station, Riverside, attacked the "irresponsible statements and many half-truths" in publications by "food-faddists" on the alleged dangers of chemicals used in growing and processing foods.

The American farmer could no more eliminate pesticide chemicals than he could get along without tractors, certified seed and purebred animals, said the agricultural scientist.

Crop Guards too Strict

Medical research and nuclear development would have to stop if the same safeguards were used to prevent radiation contamination as

are used in protecting crops said Dr. Hardin B. Jones, medical physicist at the University of California. Dr. Jones holds that the terms of the federal Food, Drug and Cosmetic Act regulating pesticide use are not realistic.

Legislators have established a level where radiation contamination is considered safe, he said, but no such level is used in regulating contamination from pesticide residue.

"Failure to use pesticides could result in the production of food-stuffs far more harmful to human health than the relatively insignificant amount which has been condemned because of misuse by only a handful of growers," stated Congressman Jamie L. Whitten, (D-Miss.) chairman, Agriculture Appropriations Subcommittee, U. S. House of Representatives.

Congressman Whitten told NAC members and guests that the entire nation's food supply is being threatened through lack of knowledge as to just how much we are all dependent upon chemicals for our supply of the most economical, finest, plentiful and highly nutritious food that any nation has ever had.

"Today, pesticides must be used by farmers to produce the high quality and low cost foods which consumers in the United States demand. If it were not for the use of sprays and dusts, living costs would increase substantially because of crop damage from pests and diseases," declared Congressman Whitten. "The development of more effective pesticides is one of the reasons why it takes only

le benefits

twelve per cent of our population to produce food, clothing and shelter for the remaining eighty-eight per cent . . . who are free to engage in activities to provide the highest standard of living for all of us."

New Officers

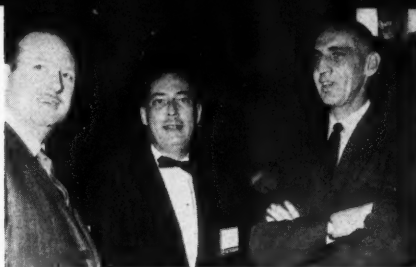
George R. Ferguson, president of Geigy Agricultural Chemicals Division of Geigy Chemical Corporation, Yonkers, New York, and Herbert F. Tomasek, president of Chemagro Corporation, Kansas City, Missouri, were elected president and Vice President, respectively, of the NAC Association.

Dr. Ferguson has been a member of the organization's Board of Directors since 1958 and served as NAC Vice President last year. Mr. Tomasek has been a member of the organization's Board of Directors since 1959.

Also elected for another term were L. S. Hitchner, Executive Secretary and Treasurer, and Miss Lee H. Grobe, Assistant Treasurer.

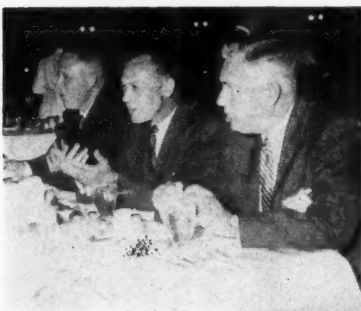
Mr. Tom K. Smith, Jr., Vice President, Monsanto Chemical Company, General Manager, Agricultural Chemicals Division, St. Louis, Missouri; Mr. W. F. Price, General Manager, Agricultural Chemicals Division, Swift and Company, Chicago, Illinois; and Mr. M. C. Van Horn, Vice President, Wilson and Toomer Fertilizer Company and General Manager, Florida Agricultural Supply Company Division, Jacksonville, Florida, have been elected to serve on the Board of Directors of the National Agricultural Chemicals Association for a three year term.

NOVEMBER, 1960



At left are shown Dr. W. L. Garman, The Best Fertilizer Co.; John S. Clark, Alexander and Baldwin Ltd.; Frank Stewart, Miller Products Company.

Pictured below are: Dick Petrus, Cotton States Chemical Co.; Lew Harris, Acme Quality Paints Inc.; Ted Riedeburg, Theodore Riedeburg Associates.



Above: R. H. Cooney, Flag Sulphur and Chemical Co.; Mercer Rowe, Ashcraft-Wilkinson Co.; L. M. Duckworth, Niagara Chemical Div., FMC.

At right are: L. G. Smith, Shell Chemical Co. and C. E. Cody, Gordon Black and Mel Wierenga, all with California Spray-Chemical Corp.



At left are: Leonard Price, Inland Steel Container Corp.; John Crain, Agri-chemical West; Jack La Rocque, Boyer Veitch, Farm Chemicals; Gus Collazo, Olin Mathieson; Dave Lynch, Vulcan-Associated Container; Gordon Shean, Inland Steel Container.



Above are Dr. S. A. Peoples, University of California; Harold B. Jones, American Smelting and Refining Co.; Jack Dreessen, NAC.

Shown below: Charles Yent, The Diversey Corp. Ltd.; William Clines, American Potash and Chemical Corporation.



ORGANIZING for marketing ACTION

*Theme for the Second Farm Chemicals Marketing Seminar to be held
November 15 and 16 at the Delmonico Hotel, New York City.*

Tuesday **9:30 A. M.**

Welcoming Address

Aims and Purposes of the Meeting

HECTOR LAZO, MODERATOR
Chairman, Marketing Dept.,
Graduate School of Business
Administration, New York University

The Principles of Marketing Organization

EUGENE B. MAPEL
Vice President, Chase Manhattan Bank

Coffee Break

How Monsanto Applied Those Principles

JOHN L. GILLIS
Vice President of Marketing,
Monsanto Chemical Co.

Question and Answer Sessions

12:30 P. M. Luncheon

2:00 P. M.

Policy Considerations and Decisions

HENRY BUND
Vice President,
Research Institute of America

Niagara's Experience in Policy Formulation

STUART H. BEAR
Manager, Niagara Chemical Div.,
Food Machinery and Chemical Corp.

Coffee Break

Question and Answer Sessions

5:30 P. M. Informal Reception

Wednesday **9:00 A. M.**

Staffing the Marketing Organization

DON SCOTT
Don Scott Associates

Coffee Break

Staffing the Marketing Organization

(Continued)

LOUIS B. BACKER
Don Scott Associates

Question and Answer Sessions

12:30 P. M. Luncheon

2:00 P. M.

The Staffing Program at Calspray

M. E. WIERENGA
Vice President,
California Spray-Chemical Corp.

Question and Answer Sessions

Coffee Break

Summary and Conclusions

HECTOR LAZO



Yes, I wish to register for the 1960 FCMS, November 15 and 16, Hotel Delmonico, New York City, New York.

I understand the registration fee is \$40.00 per person.

☐ Check enclosed ☐ Bill me ☐ Bill Company
(Kindly make check out to FARM CHEMICALS.)

Name

Title

Company

Address

City Zone State

Please use supplementary sheet for additional persons who wish to register.

Hotel Accommodations: ☐ Single ☐ Double with twin beds. Rate

Nights of: ☐ Monday, Nov. 14 ☐ Tuesday, Nov. 15

☐ Wednesday, Nov. 16 ☐ Other

Send to: Farm Chemicals • 317 N. Broad St., Philadelphia 7, Pa.

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STRENGTH OF
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RAYMOND
MPS*
SHIPPING SACKS

*MPS, Multiwall Perfect Seal
complete seamless polyethy-
lene tube as part of a multiwall
sack and heat sealed above the
sew-line to give perfect seal.

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BAG CORPORATION

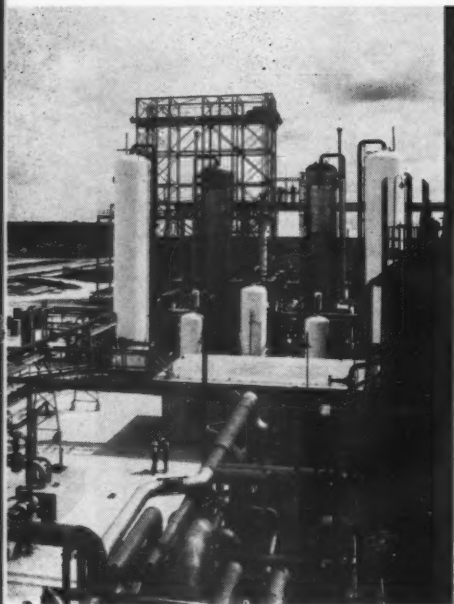
A Division of Albemarle Paper Mfg. Co.
MIDDLETOWN, OHIO

*MPS gives protection and strength resulting from combining the features of an independent polyethylene tube and a multiwall paper shipping sack to make a flexible package for the most critical requirements of storing and shipping.

*MPS is a production line package that can be filled on regular packing equipment—a package that eliminates troublesome seams and avoids liner slip and pull-out.

*MPS offers the exciting new possibilities for packaging Chemicals and other difficult-to-pack-and-ship products. Get the facts—contact us direct—or ask your Raymond Multiwall man.

Maker of RUGGED Multiwall Packaging for Industry • Atlanta • Baltimore • Chicago • Kansas City • Louisville • New York



Monsanto's Barton plant is regarded as the first chemical plant in the nation to use direct, on-line computer control of an over-all chemical process.

Computer "runs" ammonia plant



Computer runs the ammonia operation and has increased production through conversion from standard process to a completely closed, controlled loop.

for Monsanto Chemical Company at the Barton operations in Luling, La.

MONSANTO'S Barton plant, Luling, Louisiana, owns a computer that is literally *running* the ammonia operation. But it also employs plenty of *people*—in fact, five more than were there before the fantastic instruments took over. They are there to monitor the equipment. Once in a while something "baffles" the computer and it takes a little investigation to correct the flaw.

The newly formed Agricultural Chemicals Division took over the plant which had formerly been operated by the Inorganic Chemicals Division.

More than 400 people conduct a 24-hour a day, 365-day a year operation. Primarily Monsanto makes ammonia, from which they make nitric acid, ammonium nitrate fertilizer and a complete line of nitrogen fertilizer solutions. In addition, they operate an adipic acid plant and a dry ice plant.

FARM CHEMICALS wanted to know just what this fantastic operation would do for the customer. Actually, we found that it not only is a terrific boost to Monsanto customers, but . . .

This computer works all the way for the farmer!

It has already proved what it can do. Through efficient use of equipment, it has 1) increased produc-

tion 2) maintained high quality in the end product and 3) assured optimal plant operation in relation to existing economic conditions.

Dependable Supply Assured

For the customer it means a more dependable source of supply. It eliminates down-time, which usually occurs right at the peak of the season. That means the farmer won't have to wait for his fertilizer. This affords the sales staff a mighty potent sales pitch!

"Our ammonia plant is one of the largest and most modern in the world. Our prilling plant is the largest ammonium nitrate pelleting facility in the world. Located where we are on the river and with two major railroads on our property, we can and have shipped our products all over the world. However, our main customer is the domestic agricultural market with about 90 per cent of our production sold in the central and southern states," according to H. Lonnie Payton, plant manager.

"The nitrogen business, like many others in the chemical industry, is highly competitive. It is a high investment, high fixed cost operation, and under these conditions reasonable profits can only be maintained by productivity in-

creases and efficiency gains. At the Barton Plant, Monsanto has taken the first really significant step toward improving both efficiency and productivity in the synthesis of ammonia made during the last 25 years. This has been achieved by converting a standard process to a completely closed loop, computer-controlled operation," he told FARM CHEMICALS.

Payton covered the various steps of making the switch from conventional pneumatic control to a computer.

"The changes are not all made inside the plant gate," he said. "The new concepts have to be mastered for practical application by plant management. New techniques, new procedures, new training programs have to be developed to meet a wholly new set of conditions and problems.

"First, you have to learn to think and talk intelligently with a different language and different reference terms. Conversations about digital-analogue conversion, scan cycles, bits, flexowriters, programming, memory circuits, master-slave timers, transducers and print outs become everyday occurrences.

The plant manager can no longer run his operation from his hip

(Continued on page 41)

FARM CHEMICALS

READER SERVICE

*FREE INFORMATION to help you
solve fertilizer, pesticide problems*

Chemicals

334—UNCOATED UREA

A sample and additional information on urea, guaranteed 46 per cent nitrogen, is available from H. J. Baker & Bro. The uncoated prills are reported to have less moisture than with coated material, and no dust. Baker is sole agent in the United States for Cobelaz of Belgium. To get more information and a sample, simply

CIRCLE 334 ON SERVICE CARD

335—KAOLIN CLAY

Type-41 kaolin clay is non-abrasive, has small particle size, is chemically adaptable and has good adhesive qualities, according to Southeastern Clay Co. Information on the material, used in extending insecticide materials, can be obtained by

CIRCLING 335 ON SERVICE CARD

336—"MALAMASQUES"

D&O Laboratories have developed a new line of odorants especially designed to improve the odor of malathion in a variety of end products, including insecticides, flea sprays and powders, and aerosol garden sprays. A "Malamasques" brochure, just off the press, is available by

CIRCLING 336 ON SERVICE CARD

337—MORE TIMBER FROM WEED TREE CONTROL

More Timber Through Weed Tree Control with Weedone Chemicals in Forest Land Management is the title of a well-illustrated brochure prepared by Amchem Products, Inc. Foliage sprays, cut surface application and basal bark sprays are covered. To obtain your copy of this informative piece, simply

CIRCLE 337 ON SERVICE CARD

338—PENNSALT'S PRODUCTS

Pennsalt's Products—Where They Come From, How They're Made is the title of a brochure available from Pennsalt Chemicals. A chart traces development of typical Pennsalt products from the basic raw materials, through intermediate products and processes, to the final product sold to customers in almost every industry you can name. To receive your copy,

CIRCLE 338 ON SERVICE CARD

339—MARATHON CHEMICALS

Product analyses and information related to use of Marasperse dispersants, Norlig binders, Maracarb chelating agents—all are contained in a new 31-page booklet from Marathon Division of American Can Co. Marathon's chemicals are by-products of the company's sulfite (wood) pulping operations. Marasperse can be added to any pesticide formulated as

a wettable powder, the company reports. Obtain the new booklet by

CIRCLING 339 ON SERVICE CARD

340—MITE CONTROL IN CITRUS

How to control mites in citrus crops is the subject of a brochure published by Niagara Chemical Div. of Food Machinery and Chemical Corp. It outlines recommended application procedures for Tedion miticide on oranges, grapefruit, tangelos, citrus citron, tangerines, limes and lemons. Advantages the booklet cites are the material's long residual action, ability to kill mites that have become resistant to other pesticides and safety to humans as well as bees and natural predators. Copies are available without charge.

CIRCLE 340 ON SERVICE CARD

341—TAKO KAOLIN

Year after year, TAKO Airfloated Colloidal Kaolinitic Kaolin is used in large tonnages—as a diluent-carrier in formulations of pesticides and as a prilling and coating agent in high analysis fertilizers, reports Thomas Alabama Kaolin Co. Produced under laboratory control, TAKO is said to be non-abrasive, non-hygroscopic, non-caking and free flowing. For complete information on the material

CIRCLE 341 ON SERVICE CARD

342—AGRIWET 9086

Data sheets on Agriwet 9086 have been prepared by Nopco Chemical Co. for pesticide formulators. The company says Agriwet 9086 offers rapid and thorough wetting of pesticidal wettable powders. It also is reported to prevent flocculation which occurs when wettable powders are dissolved in hard water or when two or more wettable powders are dispersed in combination in the solution. To get your data sheets,

CIRCLE 342 ON SERVICE CARD

Process Equipment

343—CHOPPING & DELUMPING FARM CHEMICALS

Supreme Choppers and De-Lumpers reduces large chunks of aldrin, DDT, urea, ammonium nitrate, sulfur, phos-

phates, potash and other materials to clean, desirable sizes with minimum over-grinding, says Frank P. Miller & Son, Inc. The machine's low rpm, non-churning chopping action is anti-clog and self cleaning, according to Miller. Get details by

CIRCLING 343 ON SERVICE CARD

344—COMPLEX FERTILIZER BULLETIN FROM C&I

Complex Fertilizer is the title of a new bulletin from The Chemical and Industrial Corp. The bulletin says that C&I complex fertilizer plants combine the proven PEC acidulating ammoniating section with C&I's patented spherodizer to assure a superior pelleted product with low recycle. A flow chart is included. To obtain a copy,

CIRCLE 344 ON SERVICE CARD

345—LIQUID FERT. BLENDING UNIT

The P.F.E. Formulator soluble fertilizer blending unit produces formula liquid fertilizers of "pharmaceutical accuracy" and delivers the product when you want it while the rush is on, according to its manufacturer, Plant Food Equipment Co. The Formulator is reported to be a solo-operated plant and a continuous producer with the charging of the three measuring tanks and bulk hopper at the same time. Next cycle is started immediately by discharging water and aqua ammonia simultaneously under pressure, and rate of flow of each to the reactor tank is manually controlled after neutralization is completed; other ingredients are added to complete the entire cycle. Components include three pressure-type measuring tanks, calibrated gauge tubes, auto-stop water meter, suspended weigh hopper with air-operated clean gate, 1300-gallon stainless steel reactor tank, agitator, pump and filler pot, 5 hp compressor, cup elevator to weigh hopper, side-winder floor sweep screw conveyor, panel wiring to motors and push buttons from relays. Capacity: Up to 30 tph, depending on formula. For an illustrated brochure,

CIRCLE 345 ON SERVICE CARD

346—SCREW FEEDING DATA

More than 400 different dry materials used on their screw feeders are listed in an 8-page data folder issued by Vibra Screw Feeders, Inc. Listed also are the names of the companies supplying the material, and data concerning material density, type and size of screw used, maximum rate in pounds per minute, and minute-to-minute accuracy of the operation. The folder is available to readers. Just

CIRCLE 346 ON SERVICE CARD

how to use the READER SERVICE CARD

- Circle number of literature you want
- Print or type your name, position, company and address
- Clip and mail the Service Card

*See pages 54 and 55 for information
on these Reader Service numbers:*

360—Hough 30R Payloader
361—Pull-Type Applicator
362—Aluminum Engine Driven Pumps

363—Heat Transfer Equip.
364—Palletless Bag Handling
365—Roto-Werl Spreader

347—PRESSURE & TEMP. CONTROLLERS

Pneumatic pressure and temperature controllers now available from OPW-Jordan are described in a new 6-page catalog. Controlling pressures up to 10,000 psi, and temperatures from -125° to 1000° F, OPW-Jordan controllers are reported to be simple, self-contained and give precise response (1 per cent middle half of scale). The catalog describes features and accessories, and gives dimensions, specifications, materials of construction and complete engineering information. For your copy,

CIRCLE 347 ON SERVICE CARD

348—NEW MIXERS

Cleveland Mixer Co. just introduced its line of "Building Block" top entering mixers and has prepared a booklet which should answer all your questions about the mixers. They are designed and built on the "Building Block" concept, which allows complete interchangeability of the basic components. This gives the process engineer "the mixer he needs today . . . adaptable to tomorrow's requirements," the manufacturer reports. Models are available for open or closed tank mounting. To receive the brochure, just

CIRCLE 348 ON SERVICE CARD

Materials Handling

349—GAUGES FOR AGR. AMMONIA

Marsh Instrument Co.'s AA series of pressure gauges are made expressly for agricultural ammonia. They're corrosion resistant, moisture and dust resistant, sturdy and easy to read, the manufacturer says. A special bulletin on Marsh Gauges for Agricultural Ammonia Equipment is available. Secure yours by

CIRCLING 349 ON SERVICE CARD

350—PAYLOADER CALLED 'MOST EFFICIENT'

The H-25 Payloader is "proving to be the most efficient mover we ever used," reports a southern fertilizer producer. Feeding 5-10-15 fertilizer from the stockpile on a 50 ft. haul, the H-25 is able to keep up with the 1-ton-per-minute capacity of the bagging machine, he says. Although the H-25 has 2,500 lb. operating capacity, larger tractor shovels up to 12,000 lb. operating capacity are available. Full information can be found in "Industrial Materials Handling the Payloader Way," available by

CIRCLING 350 ON SERVICE CARD

351—BULK MATERIAL HANDLING

A comprehensive 32-page booklet entitled: "Tote, a Complete System to Solve Your Bulk Material Handling Problems," now is available from Tote System, Inc. The catalog details all the ramifications of the Tote System as an inplant and interplant system; as an automated system; as distinct storage units; discharge hoppers and shipping containers. Detailed explanations of filling, discharging, storing, shipping, automating Tote Bins in almost any given plant situation are included in the full-color brochure. For your copy of this informative booklet,

CIRCLE 351 ON SERVICE CARD

352—PLASTIC TANKS FROM METALWELD

Metalweld Inc. reports its Kabe-O-Rap Tanks are corrosion resistant, reinforced plastic tanks for use in the chemical and allied industries. They consist of a fiber-glass reinforced plastic tank shell which is helically wound with stainless steel cable. The tank is designed so that while the plastic contains the liquid, the hoop stresses are carried by the cable. For details,

CIRCLE 352 ON SERVICE CARD

353—PENTON SHEET FOR TANK LININGS

Extruded Penton sheet in 48-in. wide rolls now is available for lining tanks, vessels and other equipment, reports National Vulcanized Fibre Co. Use of Penton linings is said to be a practical means of incorporating corrosion and abrasion resistance in many kinds of equipment operating in moderate to severe corrosive environments. Penton linings are applied both to existing equipment in the field and to new equipment during fabrication. Additional information about extruded Penton sheet for tank linings is available by

CIRCLING 353 ON SERVICE CARD

Packaging

354—BOOKLET DESCRIBES UNION'S I&C BAGGER

The complete line of I&C Baggers and auxiliary equipment is described in an illustrated booklet from Union Bag-Camp Paper Corp. The I&C was designed specifically for ease of installation—featuring lower head room and requiring floor space of only 5' x 5'. It handles open mouth bags of from 10 to 200 pounds. Get a free copy of the booklet, by

CIRCLING 354 ON SERVICE CARD

355—CATALOG FILE FROM FISCHBEIN

Dave Fischbein Co.'s free catalog file of bag closing equipment covers their automatic model BA-6, Fasal tape binding attachment, and portable bag closer. The portable model weighs only 10½ pounds, requires no installation, handles all textile and paper bags and closes an average 100-pound bag in less than 6 seconds. Find out more about Fischbein equipment by

CIRCLING 355 ON SERVICE CARD

Application Equipment

356—SELLERS SWATHMASTER

An eight-page, well-illustrated bulletin from Transland Aircraft covers the Sellers Swathmaster, for dusting, spraying, seeding or fertilizing. It changes from job to job by means of a simple resetting of the pilot control in a few seconds without any aerial applying time lost for equipment changeover, modification or maintenance, Transland reports. The booklet describes how the Swathmaster works, its installation and its advantages. For your free copy,

CIRCLE 356 ON SERVICE CARD

357—GAS TRANSFER ASSEMBLIES

Howe Gas Transfer Assemblies can be used with either ammonia or LP Gas, on all bulk tanks, field service or tank truck installations, according to Howe Ice Machine Co. The Howe double-truck type piston reduces oil pumping and increases pumping efficiency, its maker reports. Safety head design offers protection against mechanical damage and personal injury. For literature,

CIRCLE 357 ON SERVICE CARD

358—CLARK NITRO-LIZER

Clark Manufacturing Co.'s complete line of applicators and accessories are shown in a free catalog now available. Six reasons for choosing the Nitro-Lizer, Clark says, are its quick folding heavy-duty hinge; it's easier to hook-up; has heavy-duty 1¼ x 1¼ spring steel shanks; patented "self-cleaning" design; unique and simplified valve arrangement and rugged "A" frame. The catalog can be yours, by

CIRCLING 358 ON SERVICE CARD

Miscellaneous

359—ANTIOXIDANT FOR INSECTICIDES

Applications of Tenamene 3 (2,6-di-tert-butyl-p-cresol) as an industrial antioxidant are discussed in a new 16-page brochure available from Eastman Chemical Products, Inc., subsidiary of Eastman Kodak Co. Performance charts and graphs illustrate the effectiveness of Tenamene 3 as an antioxidant for such materials as lubricating oils, elastomers, polyethylene and insecticides. Copies can be had by

CIRCLING 359 ON SERVICE CARD

FARM CHEMICALS



One bag broke . . . the other has two-way stretch

The one with stretch is made of H&W's new, high-strength Expanda Kraft.


A large tractor-trailer ran over both bags of equal weight and plies. The regular kraft bag burst under pressure—see the tell-tale flour on the inside tire tread. But look at Expanda Kraft—*not a sign of breakage!*

Expanda Kraft is stronger, because it's made

by a special roll-crepe process. It's resilient, has two-way stretch, and soaks up shock. And Expanda Kraft is available in white, semi-bleached and natural.

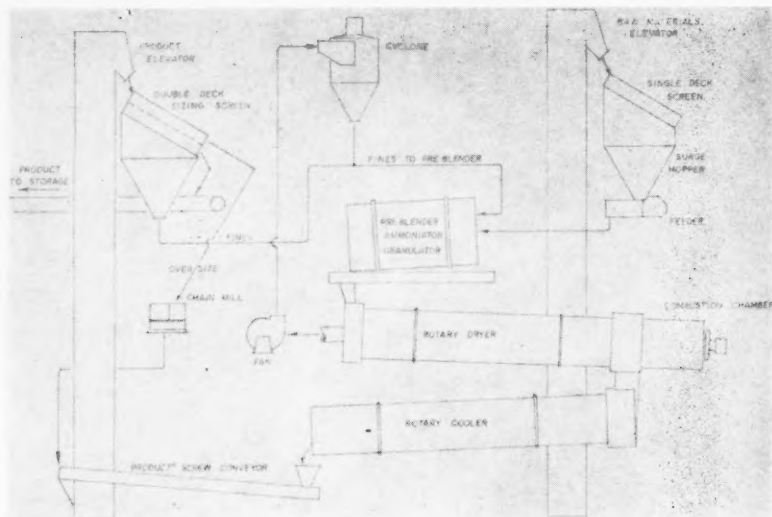
Expanda Kraft comes in 40, 50, 60, 70, 80 and 100-pound basis weights. *For samples and information*, write Hollingsworth & Whitney, Division of Scott Paper Company, Chester, Pa.

Safeguard your product in **EXPANDA KRAFT®**

HOLLINGSWORTH & WHITNEY DIVISION OF
 **SCOTT PAPER COMPANY**

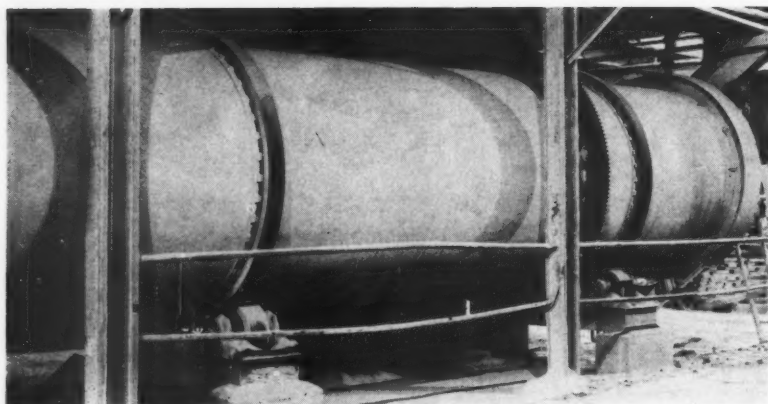
PRODUCTION METHODS

Flow diagram shows complete granulation system in stages required.



Canada Packers, Limited

RE-EQUIPS FOR

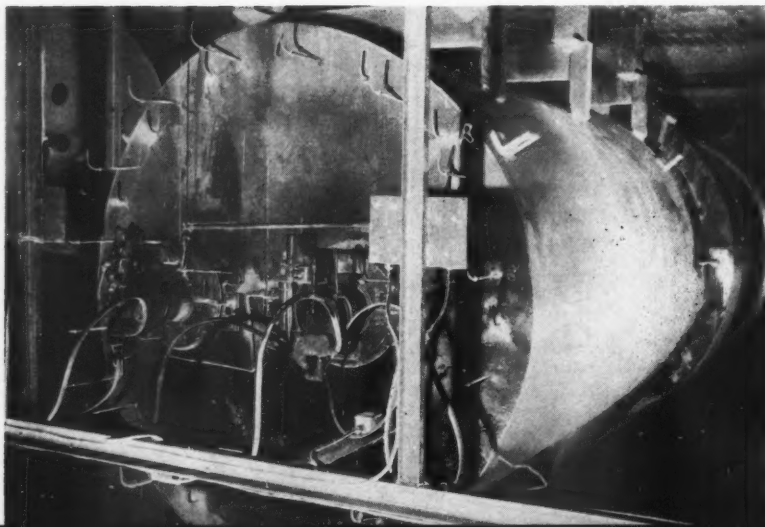


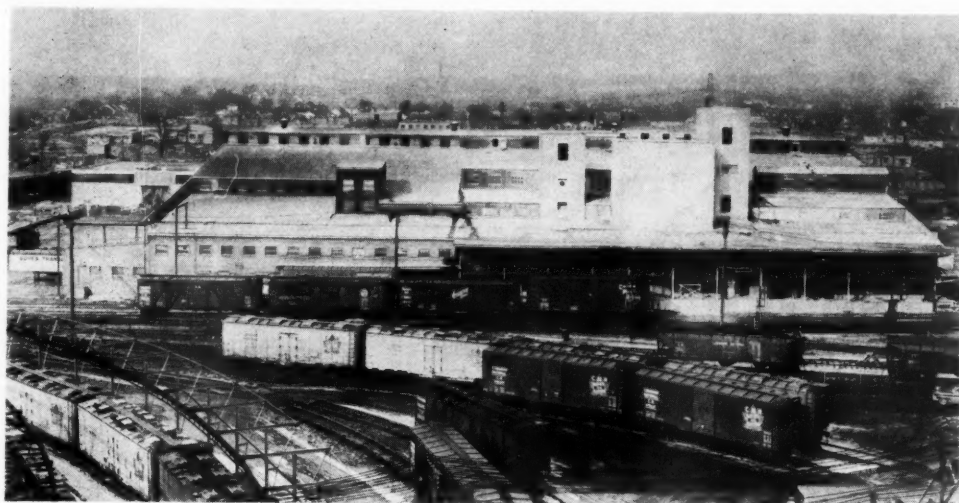
Rotary cooler, measuring 7' x 30', receives material from the dryer.

CANADA PACKERS LIMITED, in keeping with its policy of providing the highest quality fertilizers to its dealers, has just recently re-equipped its Toronto plant with a completely new granulation unit. The flow of material through the plant has been revised to incorporate several large items of equipment.

The accompanying flow diagram shows the complete granulation system which incorporates gravimetric feed, preblending, ammoniation and granulation, drying and cooling, and sizing of the finished product. Continuous preblending

Combustion chamber is brick-lined, has manual and automatic controls and twin rotary cup type oil burners.





Exterior of Toronto plant of Canada Packers Ltd. where granulation unit was installed is shown above.

R GRANULATION

of raw materials to the process is done in a FEECO Preblender-Ammoniator-Granulator which incorporates mixing along with continuous ammoniation and granulation. Dry material is continuously gravimetrically fed into the preblending section where it is tumbled and mixed and spills over the edge of the preblender discharge retention ring on the top of the material bed in the ammoniator. This method assures complete mixing right up to the time of ammoniation which is the heart of the granulation process in operation. The pre-mixing of materials with re-

cycle fines has tended to reduce the formation of ammonium chloride fumes normally encountered in this phase of the operation.

Material from the preblender goes to an 8' x 50' counter-current rotary dryer. A noteworthy feature of the dryer is the full curtain flighting which enables complete distribution of the materials in the drum which, in turn, allows maximum impingement of the air stream. This flighting design was developed and proved in actual installation.

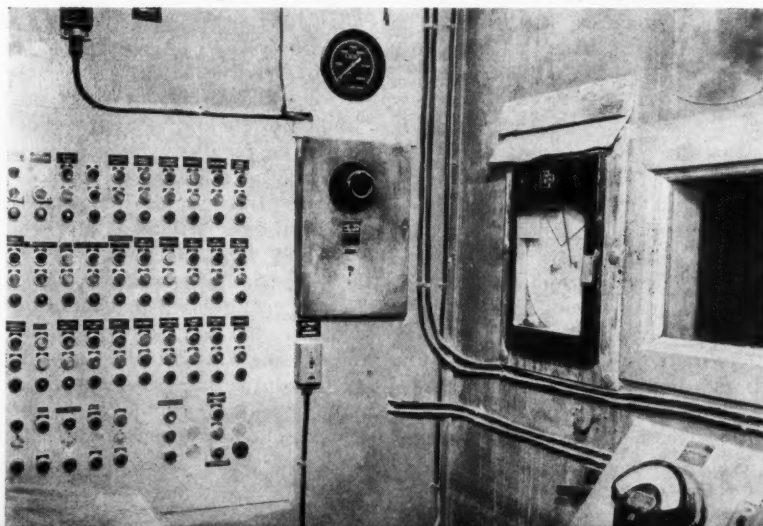
The same high distribution pattern, in general, is used in the 7' x 30' cooler. The dryer, fired in a

brick-lined combustion chamber, is operated by twin rotary cup type oil burners. These dual units were incorporated into a combustion chamber engineered for this particular application in order to enable a closely controlled high heat release range. Flexibility in convenience of use has been completed with both manual and automatic control based on exit air temperature. A uniform load is necessary in order to eliminate any overheating of the product and the controls have performed excellently.

The installation, as it was fitted into the existing large plant of Canada Packers at Toronto, is effectively demonstrated in the accompanying photographs which include gravimetric feeding, the preblender-ammoniator-granulator—7' x 16'; rotary dryer—8' x 50'; rotary cooler—7' x 30'; combustion chamber with twin burners; burner controls; chain mill and the control room where electric and combustion safety controls are located.

A similar installation, for a slightly lower production rate, was recently incorporated into Canada Packer's Welland plant. This installation featured a 7' x 16' preblender-ammoniator-granulator, 6' x 30' dryer complete with combustion chamber, gas burner and controls, and a 5' x 30' cooler. ▲

Control room for granulation unit has electric and combustion safety controls.



PATENT REVIEWS

By Dr. Melvin Nord

GRANULAR FERTILIZER FROM CALCIUM METAPHOSPHATE

U. S. 2,945,754, issued July 19, 1960 to Travis P. Hignett, Alvin B. Phillips and Ronald D. Young, assigned to Tennessee Valley Authority, describes a method of producing granular fertilizer from hard, glassy calcium metaphosphate.

Although total crop response is substantially the same for metaphosphate and superphosphate, there is a great difference in the behavior of these materials in the soil. When an orthophosphate such as superphosphate is applied, the quantity of available phosphate is at its maximum immediately after application. Available phosphate decreases rapidly. Usually not more than one-tenth of the orthophosphate applied can be accounted for by determining the quantity of phosphate taken up by plants grown on the soil and the quantity leached out of the soil. The remainder is bound in the soil in some unknown form, unavailable for plant food.

When metaphosphate is applied as fertilizer a quite different group of chemical reactions occurs. Phosphate in water-soluble forms available for plant food is at its minimum immediately after the application. The quantity of water-soluble material slowly increases over a long period of time. Thus, when metaphosphate is used as fertilizer, much of its phosphate content becomes water soluble later in the growing season.

The reason for this effect is believed to lie in the structure of calcium metaphosphate and its hydration and hydrolysis in the soil.

OBJECT OF THE INVENTION

The object of the present invention is to provide granular, non-hygroscopic, free-flowing fertilizer materials containing phosphate in such varieties of forms and proportions that a substantial proportion of such phosphate is in water-soluble form and therefore available for plant use immediately after the fertilizer is applied to soil, and an increased amount of soluble phosphate is maintained in the soil for a long period of time.

It has been found that this can

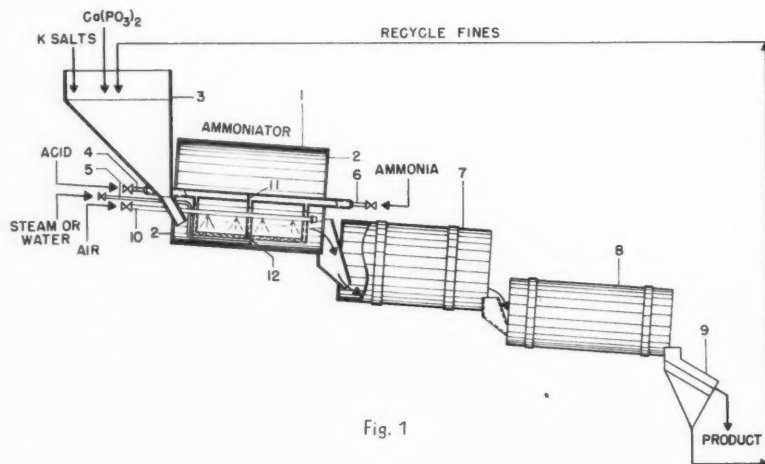


Fig. 1

be accomplished by preparing a granular, high-analysis fertilizer material having about 15 to 60 per cent of its phosphate content in water-soluble form and not more than 50 per cent of the phosphate content in the form of orthophosphate, and consisting of calcium metaphosphate, incompletely hydrolyzed metaphosphate, and calcium orthophosphate. Such materials may be produced by a process, as shown in Fig. 1, which consists of introducing calcium metaphosphate into the upper end of an inclined rotating drum; maintaining a bed of rolling solid particles of such materials within the drum; introducing an acid (sulfuric acid, phosphoric acid, or nitric acid) beneath the surface of the bed at controlled rate; maintaining the temperature of the bed in the range 166° to 215° F.; introducing water or steam into the bed in such proportions that the water contained in the acid, and introduced as liquid or as steam, less the water evaporated in the process, is insufficient to completely hydrolyze the calcium metaphosphate introduced under these conditions; and cooling the resulting granules. Potassium salts, ammonium sulfate, superphosphate, phosphate rock, or other dry fertilizer materials, if required by the particular formulation being produced, may be added with the calcium metaphosphate or separately at the upper end of drum 1 through hopper 3. The solid material or materials form a rolling bed of particles within the drum.

The depth of this bed is predetermined by the width of retaining rings 2. An ammoniating fluid such as one of the common ammonium nitrate-ammonia-water solutions widely used for ammoniating fertilizer mixtures, or anhydrous ammonia, is introduced via distributor line 6 in quantity sufficient to neutralize the acid present. A blast of cooling air from line 10 is directed upon the surface of the rolling bed. This air penetrates into the bed somewhat and, in addition to its cooling effect, increases evaporation from the surface of the forming granules.

When granulation is substantially complete, either in drum 1 or in granulator 7, the granulated material is passed through a suitable cooler 8. The granules are then sized, oversized material is crushed, and fines are recycled to the feed end of drum 1.

PESTICIDES

U. S. 2,943,972, issued July 5, 1960 to Gerrit J. M. van der Kerk and assigned to North American Philips Co., Inc., provides a method for treating plants to prevent injury by fungi by applying to the absorptive structure of the plants certain dithiocarbamates.

U. S. 2,943,973, issued July 5, 1960 to Bradford L. Archer and assigned to Phillips Petroleum Co., provides a tree spray for controlling mites, using a high-boiling organic sulfur-containing kettle product material containing about 53 weight per cent of dodecyl mercaptan.

HIS BUSINESS IS MAKING YOUR BUSINESS BETTER

*Like all the men and women in Cyanamid's phosphate operation,
his only business is phosphates for your mixed fertilizers*

He's one of several hundred Cyanamid people who mine, process, research, deliver and service phosphatic materials for your acidulation and mixed fertilizer business. These people put Cyanamid's more than 40 years of phosphate experience into products and services you can use.

Services you can use

Traffic Service: Cyanamid traffic specialists are ready to route and ship your orders without delays. Their knowledge can save you money and can make your operation run even more efficiently.

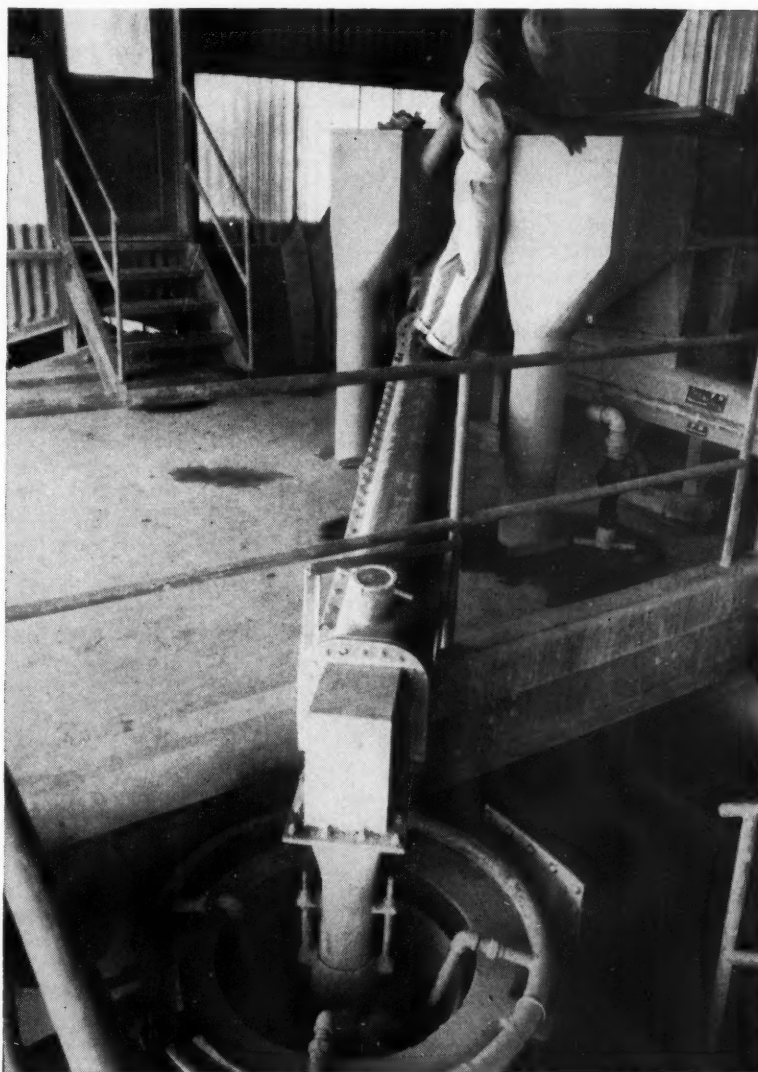
Technical Service: Cyanamid's staff of technical experts are on 24-hour alert. Often, what are new problems to you are solved problems to them. Make your formulation and production problems theirs. That's their job.

Sales Service: Cyanamid sales representatives are available to work with and for you in expanding present markets or in establishing new markets.

Products you can use

Cyanamid's only phosphate business is manufacturing the highest quality products for your mixed fertilizer requirements.

- Florida Natural Phosphate Rock.
 - TREBO-PHOS® — Triple Superphosphate.
 - Phosphoric acid for acidulation.
- American Cyanamid Company, Agricultural Division, N. Y. 20, N. Y. *TREBO-PHOS is American Cyanamid Company's trademark for its triple superphosphate.



This Cyanamid technician is checking the flow and quality of phosphate rock just before it goes into the cone where it is mixed with phosphoric acid to make Trebo-Phos Triple Superphosphate.



CYANAMID SERVES THE MAN WHO MAKES A BUSINESS OF AGRICULTURE

PEST REPORTS

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By Kelvin Dorward*

DAMAGING infestations of the **corn earworm** were reported from various areas of the United States during September. The insect was damaging corn in widely scattered areas of Oregon, with infestations averaging 60 per cent in Umatilla county fields checked and 60 per cent ear infestation in Polk county. Infestation in canning corn in Utah was running slightly higher than in 1959. Tare in canning corn in Utah county was 6-7 per cent with 35 per cent tip infestation, in Box Elder county 2-3 per cent with 10 per cent tip infestation, and in Cache county 1-2 per cent with 5 per cent tip infestation.

Corn earworms were damaging soybeans in several states. Controls were necessary in several counties of Virginia and late planted beans in Arkansas. In Tallada county, Alabama, one small soybean field was completely destroyed while in several other fields the bean loss was 40-50 per cent.

In most areas of Oklahoma the corn earworm was causing damage to late-planted sorghums. Counts of 1-4 larvae per head were recorded in several counties. Sorghums in areas of Texas, Missouri, Kansas and Alabama were attacked by the insect.

Heavy populations of the corn earworm on corn were also recorded from Delaware, Missouri, Nebraska, and Nevada.

The **sorghum webworm** caused damage to sorghum in several states during September. There was extensive damage in late-planted grain sorghum in most areas of Oklahoma. In some fields in south central and east central areas of the state, larval counts averaged 50 per sorghum head. Populations of the insect were very high in late sorghum in areas of Missouri. Several fields in the southwestern part of the state were completely devoid of grain due to damage from the sorghum webworm and corn earworm. Experimental sorghum plots in Neosho county, Kansas, were

heavily damaged by the insect and populations were also recorded in areas of Texas, Arkansas, Alabama, and North Carolina.

The **fall armyworm**, reported last month as being damaging, continued to cause losses over a wide area. All cover crops in Haywood county, North Carolina were attacked by the insect, with counts up to 15-20 per square foot. In other areas of the state, millet, cane, and lawns were damaged. In Chesterfield county, Virginia, Sudan grass and fall rye were severely damaged. The worm was responsible for heavy damage to pastures and grain sorghum in various parts of Alabama.

Lawns and pastures were severely damaged by the fall armyworm in southern, central, western and northern Texas. In Oklahoma a wide variety of crops was attacked by the insect with some newly planted fields of alfalfa in Pawnee county being destroyed. Crops were also damaged in eastern Kansas, southwestern Missouri, western Tennessee, Arkansas and Louisiana.

The **spotted alfalfa aphid** increased sharply in several areas during September. Heavy populations were recorded on 15,000-20,000 acres of alfalfa in Los Angeles county, California. Damage was also reported from Sacramento county. Counts ranging from 0-15 aphids per sweep were made in several areas of Clark and Lincoln counties, Nevada. The highest populations of the season were recorded in Kane county, Utah and damage resulted. Populations increased rapidly in several Colorado counties with an average of 2,000 aphids per 100 sweeps in Prowers county being the high count.

Heavy populations of the spotted alfalfa aphid were also recorded in the western part of Oklahoma. In southwestern Missouri alfalfa field counts reached 75 per sweep and in Ellis county, Kansas 140 per sweep. Light populations were reported from Nebraska and Illinois. The first collection of the aphid for

the season in Washington was made at Burbank in Benton county. Collections were also made in Malheur county, Oregon for the first time as well as in Owyhee, Canyon and Payette counties, Idaho.

The **oriental fruit fly** was reported last month to have been collected twice in Anaheim, Orange county, California. During the week of September 15-20 one female fly was taken in a trap at Carpenteria, Santa Barbara county.

Among the vegetable insects, **loopers** perhaps caused the most concern during September. In Arizona controls prevented damage to lettuce even though egg counts were very high. Controls were also needed on lettuce in New Mexico. The insect was severe on cucumbers on the Eastern Shore of Virginia and on various vegetables in areas of Delaware.

Boll weevils and **bollworms** were the principal cotton pests during September. Due to scarcity of squares, the remaining ones carried high populations of boll weevils in most areas. Bollworms were of concern in practically all of the cotton sections. Reports from California east to Georgia stated that moderate to heavy populations were present.

Among the forest insects, **pine** and **ips beetles** were active over widely scattered areas. These beetles were responsible for the killing of ponderosa pines in the Glenco-Wilseyville area, Calaveras county, California. Damage by pine beetles was also reported from Alabama, North Carolina and Virginia and by the ips beetles from the latter two states.

The **face fly** continued to spread with North Dakota being added to the list of states reporting the insect. **White-fringed beetles** were reported during September as being found for the first time in Beaufort county, North Carolina; Dyer, Lauderdale, Weakley and Fayette counties, Tennessee; and Mississippi and Craighead counties, Arkansas. ▲

* Chief Staff Officer, Survey & Detection Operations, Plant Pest Control Div., Agricultural Research Service, USDA.

COMPUTER "RUNS" AMMONIA PLANT

(Continued from page 32)

pocket. A highly trained team of engineers, technicians, programmers, operators and maintenance men must be organized to exploit the capabilities of a machine that reads data, calculates, sends out control signals and prints results all in a few seconds.

"Establishing confidence in the computer-controlled system among its plant employees proved to be a simple task," Payton said.

"It was only a matter of a few days' operation before we knew that the computer could definitely help the plant through a consistently higher throughput and a considerable gain in efficiency over what was possible under conventional control."

It also became readily apparent that this computer was not going to eliminate any jobs or replace any people. "It is just a highly specialized new tool to aid our people to do their jobs better."

The computer project objectives of increased production and higher efficiency have been successfully accomplished. The advantages of split-second calculation and control adjustment, complete and detailed observation of all process variables and extensive logging of data far outweigh the disadvantages. Maintenance manpower must be highly skilled to cope with the complex electronic systems involved.

The computer itself requires little maintenance, but the whole control system must be constantly monitored to spot and correct immediately any malfunctions in associated equipment.

The computer only does what the various flow, pressure and temperature indicators tell it to do. Of course, many safety features and limits are built into the machine to take care of any instrument failures, but any slight inaccuracies in measurement will result in less than optimum control by the computer. Therefore, a much higher level of instrument maintenance must be attained by maintenance personnel.

"At our plant, our programmers and engineers have gained new knowledge about what was previously considered a fairly cut-and-

dried process. Studies are underway to adapt the process control computer to do other jobs; in engineering, calculations and cost control work," Payton concluded.

Guy Legendre, process engineer, told FARM CHEMICALS that the computer has been "told" beforehand what combinations of fuel, raw materials, temperatures, pressures and other variables will produce the greatest amounts of good ammonia under a series of varied conditions.

The computer knows how to compensate for such things as weather changes. Or if too much hydrogen or nitrogen shows up

near the end of the stream, the computer automatically trims input back at the beginning so as to prevent waste of the purified gas.

How do you estimate the profit returned from such an installation?

Economic values can be returned by the computer, according to Assistant Director of Engineering Claude L. Parish, as follows:

1) Increased product for sale, 2) reduced cost of production, 3) increased efficiency of raw material use, and 4) improved quality of product.

No wonder Monsanto officials are planning to have other plants equipped with computer systems!

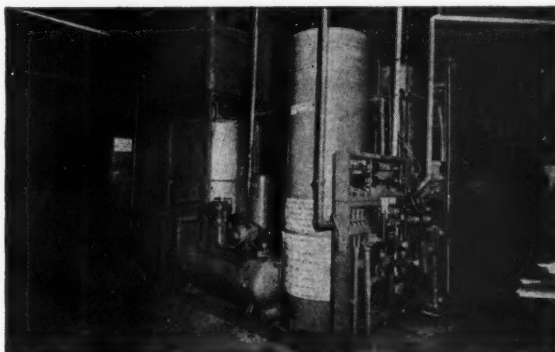
Delivers the product at extremely LOW COST when you want it, while the rush is on

Formula LIQUID FERTILIZERS of pharmaceutical accuracy
produced by the Automatic, SOLO OPERATED

P.F.E. FORMULATOR LIQUID FERTILIZER PLANT

Large blending capacity from 20 to 25 T.P.H. of bulk
soluble fertilizer ingredients (depending upon the analysis)

High speed, one-man operation—Concentrated Controls—Pneumatic movement of raw materials—Oversize Reactor—Automatic Potash Weigh System—Measurement by Factory Calibrated Vessels. The P.F.E. FORMULATOR Liquid Fertilizer Plant is factory wired and tested for economical installation in your building, or for installation in a compact frame or metal building.



Installation view of a P.F.E. FORMULATOR Liquid Fertilizer Plant.
NOTE: concentrated controls and automatic weigh system.

Write us about your facilities, approximate dimensions of your building and capacity requirements. Complete information and sample installation diagram will be sent to you without obligation.

While attending the NATIONAL FERTILIZER SOLUTIONS ASSN., Meeting—
Nov. 9-10-11, Memphis, Tenn., VISIT WITH US (Room 352, Peabody Hotel) where things happen and for surprise announcement of the New ELECTRIC-FORMULATOR.

PLANT FOOD EQUIPMENT CO., Manufacturers
(Dept. F.C.-1160) 5000 Connecticut St. St. Louis 10, Mo.

NEWS OF THE INDUSTRY

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AMMONIA INSTITUTE SURVEY INDICATES 12% VOLUME INCREASE, CRISWELL SAYS

Returns from an annual survey conducted by the Agricultural Ammonia Institute indicate a volume increase of 12 per cent for the first seven months of 1960, as compared with the same period last year. Jack F. Criswell, executive vice president of the institute, said volume increases shown by the surveys always had been on the low side of the actual tonnage.

Returns came from 78 ammonia distributors in 25 states, Criswell said. Increases were reported by 42 distributors. Twenty-two showed decreases, and 14 said their tonnage was "about the same" as for 1959.

Criswell predicted 765,000 tons of ammonia would be shown to have been used as a direct application nitrogen fertilizer during the fertilizer year which ended June 30, 1960.

Better weather conditions and use of more educational meetings for farmers were cited as leading causes for volume gains. Greater advertising effort and more local test plots also were mentioned.

Decreases in some cases were blamed on adverse weather during the applying season, while other distributors mentioned new, competitive ammonia installations in their territories.

CALSPRAY BECOMES ORTHO DIV., CALIF. CHEMICAL CO.

California Spray-Chemical Corp. President H. J. Grady has announced that on October 1, Cal-spray became the Ortho Div. of California Chemical Co.

The reorganization results from a decision by Standard Oil Co., the parent firm, to expand further into chemicals. To facilitate this move, SOCAL is consolidating all its chemical interests in one subsidiary, California Chemical Co.

Ortho Div. will be headed by Grady as president. Grady has been with Calspray in management capacities for the past 34 years and became its president in February of this year.

Grady stressed the change will not affect company personnel, lines of communication or distribution

with Ortho customers. The company will continue to market its complete line of products for both the agricultural and garden supply industry.

HERBICIDE STUDY COMPLETED BY DOANE

The third annual survey of Farmers' Purchases and Applications of Herbicides has been completed, Doane Agricultural Service announced recently. The survey was expected to be available in report form by Nov. 1.

Special emphasis this year has been placed on determining the extent to which granular herbicides were used in production of the record 1960 crop. In addition, special attention is being devoted to types of application equipment which farmers are using to apply both liquid and granular herbicides. Detailed information also is obtained on dollar volume of herbicide purchases by farmers, extent that chemical weed killers are being used, by crop and by region, and brand share-of-market.

The study was conducted through the Doane Countrywide Farm Panel, a balanced cross section of the nation's commercial farmers.

EXPANSION BY ROYSTER

The Louisville plant of Price Chemical Co., recently purchased by F. S. Royster Guano Co., will be expanded and operated as the Price Chemical Div. of Royster.

New superintendent at Louisville will be M. G. Rodgers, who had been general foreman of Royster's Money Point, Va., plant. T. C. Dula, formerly assistant manager of Royster's Norfolk sales division, becomes divisional sales manager at Louisville.

CHEMETRON LOSES APPEAL ON SOUTHERN N LAWSUIT

The Georgia Court of Appeals has dismissed as premature an appeal by Chemetron Corp. in a \$6.5 million lawsuit brought against it in October, 1958, by Southern Nitrogen Co., Inc., of Savannah.

Southern Nitrogen claims damages for Chemetron's alleged delay and negligence in construction of Southern's nitrogen fertilizer plant in Savannah, begun in 1956.

On Feb. 23, 1960, the City Court of Savannah had rejected Chemetron's argument that Southern Nitrogen could not legally recover lost profits included in its damage claims.

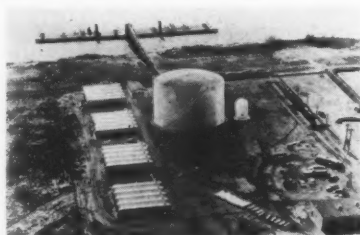
Action of the Georgia Court of Appeals in dismissing Chemetron's appeal means that the company must stand trial in the City Court of Savannah on Southern Nitrogen's full claim.

Southern Nitrogen manufactures ammonia, nitric acid and ammonium nitrate solution at plants in Savannah, Ga., and Tampa, Fla.

MID-SOUTH ADDS TO STORAGE AT MEMPHIS, NORTH PEKIN

Addition of a 9500-ton refrigerated, atmospheric pressure ammonia storage tank at Memphis and a pair of spherical storage vessels at North Pekin, Ill., has been announced by Mid-South Chemical Corp., Memphis, Tenn.

To be in service by January 1, the new tanks are part of a major expansion program which also included launching of a new 1000-ton ammonia barge for use in the Mississippi River system and the Intracoastal Waterways. The firm also has completed a new warehouse and office building at North Pekin. (Continued on following page)



New storage units which will expand ammonia storage capacity of Mid-South Chem. are shown in these two photos. At left is an artist's conception of a new dome-topped, refrigerated tank on Presidents Island at Memphis, which is home base for the firm. Photo at right includes two new spherical tanks, one of them still under construction, at the firm's North Pekin, Ill., terminal.

The tank being built on Presidents Island near Memphis has insulation and compressor arrangements which permit the ammonia to be maintained at 28 degrees below zero Fahrenheit and at about 8 ounces above atmospheric pressure—which is 14.7 pounds per square inch. It looks like a large oil tank, since it is an upright cylinder 106 feet in diameter and 70 feet high. Walls are double, 30 inches apart and separated by Pearlite insulation. Insulating material will be kept saturated with pure nitrogen.

Mid-South distributes ammonia in 11 states—Texas, Louisiana, Alabama, Mississippi, Arkansas, Tennessee, Kentucky, Missouri, Illinois, Indiana and Iowa. It is an affiliate of Cities Service Co. and Continental Oil Co., as is Petroleum Chemicals, Inc., manufacturer of the ammonia at Lake Charles, La.

IMC TO PROCESS ROCK IN CANADA, SELL IT IN U.S.

International Minerals and Chemical Corp. will send phosphate rock from its Florida mine for processing in a new Canadian plant and return finished phosphatic fertilizers to the U. S. for sale, according to a report in the *Toronto Financial Post*.

An agreement signed recently by Electric Reduction Co. of Canada and IMC makes IMC's Agricultural Chemicals Div. sales agents in the U. S. for the Canadian operation.

A plant to produce triple superphosphate and phosphatic fertilizer solution is being built by Electric Reduction at Port Maitland, Ont. Production is scheduled for early 1961. Electric Reduction now owns a single superphosphate operation at Port Maitland.

WITCO DECLARES REGULAR DIVIDEND

Board of Directors of Witco Chemical Co., Inc., has voted a regular quarterly dividend of 20 cents per share, paid October 14 to shareholders of record on Sept. 30. The dividend is equivalent to 30 cents per share on the lesser number of shares outstanding before the 50 per cent stock distribution effected in June, 1960.

NOVEMBER, 1960

SULFUR PRODUCER DIVERSIFIES INTO POTASH

Texas Gulf Sulphur Co. has completed a core drilling program to evaluate potash reserves obtained by the company from Delhi-Taylor Oil Corp., located at Cane Creek in southeastern Utah near the town of Moab.

The drillings "fully confirm a very large potash deposit believed to be richer than any other known to exist in the United States," according to Claude O. Stephens, president of the big sulfur concern. Stephens said he would "strongly recommend" that his directors authorize company diversification into potash "if studies nearing completion yield final reports as favorable as all the interim reports have been." Texas Gulf would plan to invest "from \$20 million to \$30 million" to construct facilities in Utah. Based on studies to date, the company now favors a plant with an approximate capacity of 10,000 tons of ore daily.

Due to richness of the Cane Creek ore, "this plant would produce more potash than any existing operation," according to Dr. C. F. Fogarty, Texas Gulf vice president.

AP&CC TO INCREASE POTASH OUTPUT OVER 25%

American Potash & Chemical Corp.'s production of potash will be increased more than 25 per cent when previously announced expansions at the firm's Trona plant are completed in mid-1961, according to Wm. J. F. Francis, vice president, Marketing.

New granulation facilities are being installed in conjunction with the increased primary potash production. This will boost output of new granular muriate of potash for agriculture.

The \$11 million program—which will affect all of the plant's primary products—includes construction of a large fourth evaporator unit and other process changes.

SHELL SCIENTIST AWARDED AGR. SCIENCE DEGREE

Dr. Johannes van Overbeek, chief plant physiologist at Shell Development Co.'s Modesto, Calif. agricultural research laboratory, has been awarded an honorary

doctor's degree in agricultural science by the Institute Agronomique de l'etat.

The recent ceremony took place at Gembloux, Belgium, and marked the Institute's centennial celebration. Dr. van Overbeek was selected because of his distinguished career in agricultural research and for the more than 75 scientific publications which he has authored or co-authored.

DUPONT EXEC. FORSEES MORE COMPETITION IN THE '60's

American business can look forward to unprecedented competition in the next decade, both at home and abroad, David H. Dawson, a vice president of Du Pont Co., said at the recent meeting of the Texas Mid-Continent Oil and Gas Association.

Dawson anticipates "vastly stepped up competition, both political and economic, between the Free World and the Communist World," which will have its effect on American business.

"With heavy surpluses in petroleum and other raw materials, Russia is increasing its economic pressures through government-to-government barter deals that feature price cutting and dumping. The fact that these arrangements are prompted more often than not by political rather than orthodox economic aims makes Russia's role and weight all the more difficult to assess or to counter."

United States business will also be faced in the 1960's with increasingly effective competition in our own home markets from friendly industrial powers in Western Europe and from Japan, Dawson declared.

To meet this rising competition will require continued improvements in the productivity of our industries and continued expansion of our productive capacity and our financial reserves, Dawson said.

"It means economic incentives to encourage individuals to work at the top of their talents and financial incentives to stimulate the creation of new capital," he said. "It means we must continue to stimulate technological growth through encouragement of research at all levels."

NEWS OF THE INDUSTRY

MONSANTO NAMES DIRECTORS, MANAGERS IN NEW DIVISION



Ekberg



Arvan



Clement



Davis

Appointment of three directors of sales tops a list of key personnel named to staff the Marketing Dept. of Monsanto Chemical Co.'s newly formed Agricultural Chemicals Div.

Reporting to J. Paul Ekberg, director of marketing for the division, as sales directors are Dr. Peter G. Arvan, with responsibility for product planning; Sam R. Clement, who is responsible for major customer contacts and the target account program; and G. C. Davis, who directs field sales operations.

Three product sales managers and a manager of product distribution report to Arvan. They are Stewart D. Daniels, manager of fertilizer products; Ben W. Martin, manager of feed additives and special nitrogen products; James W. Starrett Jr., manager of pesticide products and John C. Docter, manager of product distribution.

Reporting to Davis, director of field sales operations, are seven district sales managers including Douglas Kelly Jr., at El Dorado; Richard S. Johnson at Atlanta; William R. Bone at Cincinnati; and Gladin G. Scott at New Orleans. John S. Sullivan is acting as manager of the New York district, replacing Charles A. Leonard who is on leave of absence due to illness. Charles L. Fetzner manages the San Francisco district, and George C. Kempson is in charge of the St. Louis district.

Three managers of development have been appointed to share responsibility for the development department activities of the new division. The appointments were made by James H. Senger, director of development for the division. Named managers of development are Dr. Lawrence H. Hannah for herbicide products, Dr. Paul F.

Hoffman for fungicides and insecticides and Dr. Kenneth H. Maddy for chemical feed additives.

Products made and marketed by the new division include fertilizers, special nitrogen products, insecticides, herbicides and animal feed additives.

NEW FIRM OFFERS VARIETY OF SERVICES

Hazleton-Nuclear Science Corp. has been formed in Palo Alto, Calif., as West Coast affiliate of Hazleton Laboratories, Inc., and of Nuclear Science and Engineering Corp.

It will offer Western clients services including analytical chemistry, biochemistry, radio-chemistry, radio-biology, organic synthesis, toxicology, pharmacology, entomology, radio-isotope techniques, decontamination and disposal techniques and activation analysis.

President of the new firm, Harry L. Browne, most recently was assistant to the general manager of the General Atomic Div., General Dynamics. Vice president, Dr. Ralph W. Fogleman, has been manager of Hazleton Laboratories' Western Div. since 1957.

PROGRAM COMPLETE FOR SAACI'S SALES CLINIC

Program plans have been completed for the annual sales clinic conducted by the Salesman's Association of the American Chemical Industry, according to James E. Shand, Allied Chemical Corp., Sales Clinic Committee chairman.

Scheduled for November 14 at the Hotel Roosevelt in New York City, the clinic will take for its theme "How the Company Can Better Cooperate with the Field Salesman."

Panels will discuss "What Makes

a Top Flight Salesman?"; "A More Effective Relationship Between Salesman and Product Management, Product Development and Market Research"; and "Multi-Level Selling and Relationships."

J. K. Marshall, Union Carbide Chemicals Co., will keynote the meeting, while Frank W. Lovejoy, retired sales manager, Socony Mobil Products Co. will give a talk at the luncheon.

Panel members include G. Scott Shaw, Shell Chemical; T. H. Risch, Heyden Newport; Walter M. Burgess, McKesson & Robbins; Charles Haffey, Charles Pfizer; L. William Sessions, Monsanto; Clarence H. Sigler, Naugatuck Chemical; Philip A. Burghart, Houdry Process; James P. Barry, Allied Chemical; Gordon E. Cole, Air Reduction Chemical; George C. Sweet, Reichhold Chemicals; J. E. Newman, American Mineral Spirits; and Samuel E. Moody, Socony Mobil Oil.

WILSON & TOOMER FERT. BOUGHT FOR \$8.5 MILLION

Purchase of Wilson & Toomer Fertilizer Co. of Jacksonville, Fla., by Plymouth Cordage Co. for \$8.5 million recently was announced. Plymouth was reported to have paid \$2 million in cash, with the balance financed by a group of insurance firms and banks.

WINTER MEETING OF AGRICULTURAL ENGINEERS

Some 1,200 agricultural engineers from industry, educational institutions and state and federal agencies will gather in Memphis, Tenn., December 4-7 for the winter technical meeting of American Society of Agricultural Engineers. The group will require meeting facilities of both the Peabody and Chisca Hotels for its program.

NEW SULFURIC ACID PLANT FOR DUPONT IN KENTUCKY

Contract for the engineering of a Monsanto contact sulfuric acid plant at Wurtland, Ky., for Dupont Co. has been awarded to Leonard Construction Co. of Chicago.

The plant will use mainly elemental sulfur as raw material and Monsanto Chemical Co. vanadium sulfuric acid catalyst.

TEXAS SITE FOR NEW MONSANTO PHENOL PLANT

Monsanto Chemical Co. has announced plans to construct a new plant in the Texas City, Tex., area to manufacture 50-75 million pounds per year of phenol.

Scheduled to be on stream in the spring of 1962, the facility will be Monsanto's third for phenol production, boosting its total capacity to "well over 200 million pounds."

Phenol is used in large volume to make a wide variety of chemical end products.

PRODUCTION, CONSUMPTION OF FERTILIZERS IN AFRICA

Nitrogen consumption has risen at a greater rate than production, thus increasing the already large imports needed, according to the *International Fertilizer Correspondent*, Hanover, Germany. Egyptian consumption of nitrogen represents more than 60 per cent of the African total.

Consumption of phosphate fertilizers in Africa also has increased more rapidly than production, but in 1958-59 there was an exportable surplus of 7,000 tons. Together, the Union of South Africa and Egypt account for nearly 65 per cent of Africa's consumption of phosphate fertilizers, the figure for Egypt being about one-fifth of that for South Africa. Marked increases in consumption are reported from Rhodesia and Nyasaland, as well as from Morocco. Tunisian consumption has shown a sharp decrease.

Use of potash (all of which is imported) is somewhat more than one-quarter of Africa's consumption of P_2O_5 . The $N:P_2O_5:K_2O$ ratio for the continent as a whole is 1:1:0.31. Largest potash consumers, in descending order of consumption, are the Union of South Africa, Algeria, Rhodesia and Nyasaland.



Dr. Bailey

SPENCER AWARD WINNER

One of the nation's top cereal chemists, Dr. C. H. Bailey, dean emeritus of the Institute of Agriculture, University of Minnesota, has been selected as 1960 winner of the Charles F. Spencer Award. Given for outstanding achievement in the field of agricultural and food chemistry, the award includes a medallion and a \$1,000 honorarium.

Presentation will be made on Nov. 18 in Kansas City at the annual Fall Chemical Conference sponsored by the Kansas City Section of the American Chemical Society.

SOUTHERN NITROGEN ACQUIRES MILLHAVEN

Southern Nitrogen Co. has acquired Millhaven Sales Corp., according to an announcement by John R. Riley, Southern's president.

Millhaven operates anhydrous ammonia distribution and application facilities at six towns in southeastern Georgia. Investment in this new subsidiary was about \$500,000, Riley said, and will permit an increase in Southern's sales of anhydrous ammonia for direct application.

DR. LEBARON ADDRESSES INTERNATIONAL SYMPOSIUM

Dr. I. Milton LeBaron, director of research, engineering and development for International Minerals and Chemical Corp., is one of 10 U. S. scientists who was invited to

participate in an international physics symposium on high voltage electrostatic forces September 27 through October 1 in Grenoble, France. The symposium was sponsored by the French National Scientific Research Center.

Dr. LeBaron spoke on "Electrostatic Separation of Minerals."

VALLEY FEED & SUPPLY BUYS FIESTAR

George Plitt, president of Valley Feed and Supply Co., Inc., Spring Valley, New York, has announced that his company has acquired Fiestar, which produces a multi-purpose lawn soil treatment material and supplies Niagara small package garden insecticides and fungicides.

CYANAMID CONTRACTS FOR SULFURIC ACID PLANT

Leonard Construction Co. has announced receiving the contract award for engineering and construction of a contact sulfuric acid plant at Brewster, Fla. for American Cyanamid Co.

Construction will begin immediately, Leonard said, with completion scheduled for mid-1961.

S-D SALES & EARNINGS UP

Smith-Douglass Co. reports that in its operating year which ended July 31, 1960, net sales totaled \$53,537,211, with net income of \$3,535,683 and earnings per common share of \$3.48. In operating year 1959, net sales were \$45,926,007, net income \$2,749,079 and earnings per common share \$2.75.

WITCO, US RUBBER TO FORM FIRM IN ENGLAND

Plans to form a jointly owned firm called Sto-Chem, Ltd. have been announced by Witco Chemical Co., Inc. and United States Rubber Co. Each would own 50 per cent of the \$2.5 million company which will make synthetic rubber latex in England.

SULFUR OUTPUT IN MEXICO

Production of sulfur in Mexico reached 593,395 long tons in the first half of 1960, an increase over 1959 production for the same period. Estimates put total production for the year at about 1,200,000 tons.

Fertilizer Production, Use in Africa

	1956-57	1957-58	1958-59
PRODUCTION in metric tons			
Nitrogen (N).....	40,000	49,000	56,000
Phosphoric acid (P_2O_5).....	235,000	238,000	268,000
Potash (K_2O).....	1,000	1,000	1,000
CONSUMPTION in metric tons			
Nitrogen (N).....	202,000	258,000	279,000
Phosphoric acid (P_2O_5).....	234,000	257,000	267,000
Potash (K_2O).....	62,000	79,000	85,000

NEWS OF THE INDUSTRY

Associations Meetings

FERTILIZER GRADE AMMONIUM NITRATE BOOKLET COMPILED BY MFG. CHEMISTS ASSN.

Recommended procedures for proper packaging, handling, transportation and storage of fertilizer grade ammonium nitrate have been compiled by the Manufacturing Chemists' Association.

The 24-page booklet, prepared by experts in the ammonium nitrate production and regulatory fields, carries the fertilizer grade compound from the manufacturing process through to its ultimate handling on the farm. The manual applies only to fertilizer grade ammonium nitrate and not blasting agents in which the compound is only a component.

The association states that under normal circumstances and with simple precautions fertilizer grade ammonium nitrate is completely safe.

The manual, which is a revision of a similar booklet published in



New officers of the Mississippi Soil Fertility and Plant Food Council were elected at the recent first annual meeting in Biloxi. They are (left to right) Mike R. Blouin, Jr., president; W. F. Harris, vice president; W. L. Ashley, secty.-treas.; H. S. Gordon, Jr., retiring president.

1950 by the association, is available from the MCA office, 1825 Conn. Ave., N. W., Washington 9, D.C. for 50 cents a copy.

CANADIAN FERTILIZER ASSN. NAMES OFFICERS

At the annual meeting of the Canadian Fertilizer Association at Murray Bay, Que., J. W. Thomson,

sales manager of the Agricultural Chemicals Div. of Canadian Industries Ltd., was elected president for the 1960-61 season.

Other officers elected were: William Houde of William Houde Ltd., 1st vice-president; G. H. Johnson, Swift Canadian, 2nd vice-president; R. P. Pennington, Potash Co. of America, secretary-treasurer.

May 1959 through April 1960 FARM CHEMICALS

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FIRST CONVENTION OF MISS. SOIL FERTILITY AND PLANT FOOD COUNCIL

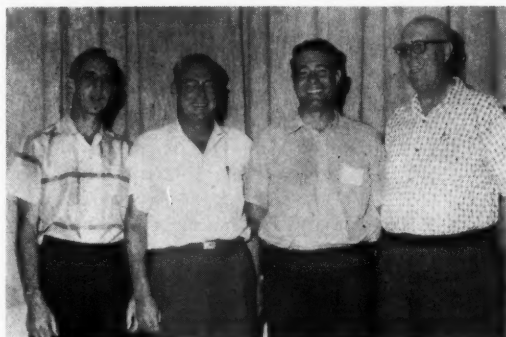
The fertilizer industry will have a big job to maintain the high standard of living enjoyed by the American people, as well as keeping farm production economically sound.

So said leaders from several fields of activity at the first annual convention, Mississippi Soil Fertility and Plant Food Council at Biloxi, August 25-27, at which there was a record attendance of more than 225.

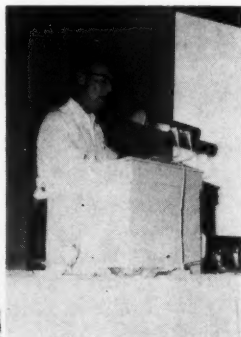
Although this was the council's first convention, Mississippi's fertilizer manufacturers, dealers and others have had state meetings for a number of years.

Mike R. Blouin, Jr., of Columbus was elected president for the coming year, succeeding H. S. "Bill" Gordon, Jr. of Jackson. The new vice-president is W. F. "Bill" Harris of Jackson, while W. L. Ashley of Jackson was re-elected secretary-treasurer.

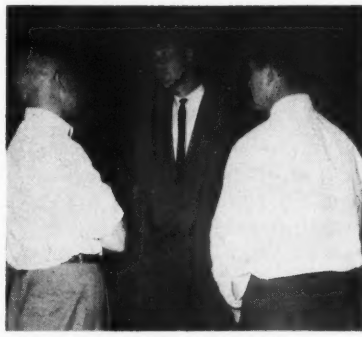
The council's 1961 convention will be August 10-12 at the Buena Vista Hotel, Biloxi.



New WACA Officers: F. B. Stewart, Miller Products Co., 2nd vice president; George H. Weldon, Velsicol Chemical Corp., president; George T. Poppic, Coast-Tox Chemical Co., vice president; and Charles O. Barnard, executive secretary of the association.



J. T. Thurston spoke on "Registration Dilemma."



Allen Lemmon, Department of Agriculture of California; Dr. Dan Aldrich, dean of agriculture, University of California; and Del Dean, USDA, have a talk.

Western Ag. Chem. Association Meets, Names Weldon President

THE FALL meeting of the Western Agricultural Chemicals Association, held on September 24-26, 1960 at the Palm Springs Riviera Hotel, California, was attended by approximately 175 representatives of the industry.

Among those who spoke was Dr. J. T. (Jack) Thurston, manager of research and development for American Cyanamid, who discussed the "Registration Dilemma" of the industry.

"There are problems in spite of all that is being done," said Dr. Thurston. "The procedures for registration of a new product are rigorous and finite."

State agencies should undertake studies on products that represent a small return on investment to industry instead of the industry doing this kind of research, Thurston said.

He expressed the hope that the FDA would get around to establishing some finite residue tolerance since zero is impossible to measure.

Agricultural research on farm chemicals is antiquated and the methods used are 20 years old, said Dr. Virgil H. Freed of the Department of Agricultural Chemistry at Oregon State University. "The results obtained take twice as long as they should."

He stated that research should be concentrated primarily in two areas, that of biological testing and in residue research. Freed said that we could be more systematic

in our studies and they should be directed more to the relationship of chemical structure to biological activity.

Unhealthy price cutting could result in less volume sold, said Dr. Freed; as a result technical service and research is curtailed, which is sorely needed.

"Pay-Day—Someday" was the presentation of Mr. Joseph E. Burger, sales manager for H. V. Nootbaar and Co.

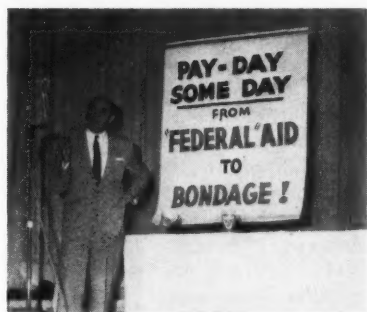
New WACA officers for the coming year include George H. Weldon of Velsicol Chemical who was re-elected president; George T. Poppic, Coast-Tox, Inc., vice pres.; Frank B. Stewart, Miller Products Co., 2nd vice-pres., a new post; and Charles O. Barnard, WACA executive secretary.

SOUTHERN WEED CONFERENCE

Latest developments in the use of herbicides to control weeds in all phases of Southern agriculture will be presented and reviewed during the fourteenth annual Southern Weed Conference to be held in St. Petersburg, Fla., Jan. 18-20, 1961.

A committee under Dr. Ellis Hauser, ARS-USDA, from the Georgia Agricultural Experiment Station, Experiment, Ga., is now preparing the program.

Officers for the conference are Dr. R. A. Darrow of the Texas Agricultural Experiment Station, College Station, Texas, president; Dr. Walter K. Porter, Louisiana



Joe Burger discussed "Pay-Day—Someday."



L. S. Whitcomb, U. S. Borax; Ken Wilson, Al Castle, Inc.; and Herb Schmitt, of U. S. Borax, caught in concentration.



Maury Roche, Calif. Farm Supply; Chuck Turzan, Geigy; and Allan Schayler, Calif. Farm Supply, chat between sessions.

State University, Baton Rouge, La., vice-president; Dr. R. E. Frans, University of Arkansas, Fayetteville, Ark., secretary-treasurer.

All sessions of the conference will be held at the Hotel Soreno, St. Petersburg. Conferees are expected to make their own hotel accommodations.

"Seeing is Believing" is Agro Forestry Theme

"Fertilizer isn't a coming thing on Christmas trees—it's already here," said Fred Peste at the third annual Agro Forestry meeting in Shelton, Wash., Sept. 12, 13 and 14. Fred Peste, manager of the Douglas Fir Christmas Tree Co., backed up this statement by taking the visiting agro-foresters out to one of his Christmas tree farms in the area. As they looked out over his acreage of fertilized trees, they could pick out pronounced differences in tree color (dark green) and larger needle size of the fertilized trees. "We have a lot to learn about rates of fertilizers to use, kinds to use, and when to apply them," Peste stated, "but I am very happy with my 1200-acre experimental plot." He plans on eventually fertilizing a good share of the 20,000 acres which he has under an intensive management program.

"As a word of caution," Peste said, "no one should fertilize trees on a large scale until they know what they are doing and what

results they are after. Fertilized trees are much heavier, have more foliage and bigger needles, and we need to know how these trees will stand up under shipment . . ." Peste indicated, however, that the results to date on a limited scale have been quite satisfactory.

Other presentations were made by: Joe Buhaly, chairman of the panel on Christmas tree management in the Pacific Northwest; Loren Curry, Washington State Dept. of Natural Resources; Dr. C. B. Harston, Washington State University; Bob McKay, Thurston county agent; Dino Sivo, Kitsap county agent; Dr. Chet Youngberg, forest soils specialist at Oregon State College; Larry Fick, Oregon State Board of Forestry; and Harry Anderson, Dept. of Natural Resources.

One of the highlights of the "seeing is believing" session was a tour of the fertilized Douglas fir plots in the Shelton area. Dr. S. P. Gessel, University of Washington,

in cooperation with the Simpson Timber Co. has established a number of randomized, replicated research plots on 40-50 year old stands. One of the major objectives of the experiments is to determine the optimum levels of fertilization necessary to produce increased economic growth on the low sites in the area. In addition to mensuration methods, leaf analysis and soil analysis are being used as a tool to determine what nutrients are lacking for optimum tree growth.

Dr. Ken Turnbull, University of Washington, demonstrated the use of mensuration methods to the group. On the basis of some-on-the-spot measurements he calculated that the two year old fertilized trees had already increased wood production from 50-100% over the no-fertilizer treatment. He emphasized, however, that observations over a five year period would be necessary before conclusive results are established.

The third annual agro forestry meeting was jointly sponsored by the National Plant Food Institute and the University of Washington in cooperation with the Simpson Timber Co.



Use of an increment borer to measure fertilizer response on a 60 year-old stand of Douglas fir at Shelton, Wash. is being demonstrated by Dr. S. P. Gessel, University of Wash. Left to right: Grant Braun, American Potash Institute; Joe Buhaly, Wash. State University extension forester; George Harrison, Nulife Fertilizer Co.; Warren Mallory, Collier Carbon and Chemical Corp.; Harry Anderson, Wash. State Dept. of Natural Resources; Dick Bahme, NPFI; Perry Crandall, Wash. State University; Al Leaf, Syracuse, N. Y.; S. P. Gessel; C. B. Harston, Wash. State University; Chet Youngberg, Oregon State College; Dale Massie, Cominco Products, Inc.

FARM RADIO NEWS SERVICE SERIES

Four prominent speakers will be featured in the National Plant Foods Institute's twenty-seventh recorded Farm Radio News Service series, now being used by 1,250 stations on request.

Speakers and their subjects for the current series are: Dr. Russell I. Thackrey, executive secretary, American Association of Land Grant Colleges and State Universities, on "What Does Your Land-Grant College Mean to You?"; Gordon K. Zimmerman, executive secretary, National Association Soil Conservation Districts, on "Conservation Means Soil Fertility"; John H. Crocker, chairman, Agricultural Commission, on "A Soil Test is to Your Credit"; Dr. Willard H. Garman, chief agronomist, NPFI, on "Wise Farmers Plan Ahead."

For further information please write to the Director of Information, NPFI, 1700 K. Street, N. W., Washington 6, D. C.

Needs of Agriculture Discussed at Southeastern Fertilizer Conference

Agriculture needs a combination of better public relations, greater production efficiency, better agricultural legislation and more intensive farmer educational programs.

This was the opinion expressed by four panelists at the Fifth Southeastern Fertilizer Conference in Atlanta, recently.

"The need for better public relations in agriculture is now more acute and has more far-reaching implications than almost any other confronting agriculture," L. Y. Ballentine, North Carolina Commissioner of Agriculture, pointed out in his opening panel talk.

"In fact, I would go so far as to say that meeting other needs will be contingent upon how well we meet the need for better public relations."

Farming is suffering from "pernicious anemia in public relations," Ballentine noted, although, "there are times when it would seem more proper to call it 'malicious' anemia."

Illness "a Family Affair"

"Professional help definitely is needed and all the industries supplying, and supplied by, farmers are members of the agricultural family. This illness is very much a family affair," he continued.

"The public generally sees farming as one of the last of the unskilled operations, involving no more investment than the farmer's elbow grease," he said.

The Commissioner called for assistance by the whole agriculture family to work together to change the climate of enmity which surrounds the farmer by telling the "true" story of American agriculture.

Speaking on production efficiency, Dr. Earl Butz, Dean of Agriculture at Purdue University, said that the biggest bargain the American people get is the food they eat.

Donald R. Matthews, United States congressman from Florida, said better agricultural legislation was needed. He cited the pioneering efforts in agricultural legislation

and pointed out that abundance of food today in large measure is a result of far-sighted legislation of former years.

Ag Education Can Contribute

Education, and specifically agricultural extension education, can contribute to the solution of what agriculture needs, W. A. Sutton, Director of the Georgia Agricultural Extension Service pointed out.

The Director cited Georgia's Intensified Soil Fertility Program which is aimed at hiking agricultural income by 400 million dollars annually by 1965 as an educational tool to help meet the needs of agriculture.

In responding to the portion of the panel concerned with agriculture's needs, Dr. Robert Q. Parks, W. R.

Grace & Co., said that Industry's responsibility for the future of agriculture is to make it sound and prosperous by getting farmers to use industry's product.

Parks suggested applying the profit motive to the functions of the county agent.

Provide Bonus

"This could be done by providing a bonus to the agent on the basis of farm income—the bigger the increase the bigger the bonus."

If you have a good product, and you believe in it, it is your responsibility to the future of agriculture to get out and sell it, he said.

CARTER NEW REPRESENTATIVE FOR ASHCRAFT-WILKINSON

It was announced recently that George S. Carter will represent Ashcraft-Wilkinson Co. in Iowa and adjoining states. He will reside in Des Moines and work out of the company's offices there.

Calendar

Nov. 2-4. Fertilizer Industry Round Table, The Mayflower, Washington, D. C.

Nov. 3-4. Annual Convention, Pacific Northwest Plant Food Assn., Boise, Idaho.

Nov. 4-17. Seed and Fertilizer Clinics, University of Illinois.

Nov. 9-10. Chemical Market Research Association, Pittsburgh Hilton Hotel, Pittsburgh, Pa.

Nov. 9-11. National Fertilizer Solutions Association, Peabody Hotel, Memphis, Tenn.

Nov. 13-15. 37th Annual California Fertilizer Association Convention, del Coronado Hotel, Coronado, Calif.

Nov. 14. Annual Sales Clinic of Salesmen's Assn. of the American Chemical Industry, Roosevelt Hotel, New York City.

Nov. 15-16. Second Annual Farm Chemicals Marketing Seminar, Delmonico Hotel, New York City.

Nov. 17. Rutgers Pesticide Dealers' Conference, Collins Auditorium, Blake Hall, New Brunswick, N. J.

Nov. 21. South Carolina Plant Food Educational Society, annual meeting, The Clemson House, (Clemson Agr. College), Clemson, S. C.

Nov. 22. Manufacturing Chemists Association, semi-annual meeting and midyear conference, Statler Hilton Hotel, New York.

Nov. 28-Dec. 1. Entomological Society of American Annual Meeting, Chalfonte Haddon-Hall, Atlantic City, N. J.

Dec. 5-9. American Society of Agronomy Meeting, Morrison Hotel, Chicago, Ill.

Nov. 29. Oklahoma Fertilizer Dealers' Conference, Huckins Hotel, Oklahoma City.

Nov. 30. New Jersey Fertilizer Conference, sponsored by Plant Food Educational Society of New Jersey, Rutgers University, New Brunswick.

Dec. 12-14. North Central Weed Control Conference, Hotel Schroeder, Milwaukee, Wis.

Jan. 4-6. Northeastern Weed Control Conference, Hotel New Yorker, New York City.

Jan. 5-7. Agricultural Aircraft Association Annual Convention, Hotel El Dorado, Fresno, Calif.

Jan. 6-7. Western Colorado Horticultural Society, annual meeting, Civic Auditorium, Grand Junction, Colo.

Jan. 10. Iowa State University Fertilizer Dealers Short Course, Memorial Union, Iowa State University, Ames, Iowa.

Jan. 11. Fertilizer Industry Representatives Conference, Memorial Union, Iowa State University, Ames, Iowa.

Feb. 9-10. Midwest Industry-Agronomists meeting, sponsored by National Plant Food Institute, Chicago, Ill.

Mar. 13-15. Spring Meeting of Western Agricultural Chemicals Association, Disneyland Hotel, Anaheim, Calif.

NEWS OF THE INDUSTRY

People

American Potash and Chemical Corp.



Carroll

industry.

California Spray-Chemical Corp. has appointed Dr. Leo Orth as fertilizer sales manager for the northern region of the Eastern U. S. Orth's appointment is in connection with the firm's new fertilizer plant near Fort Madison, Iowa to be completed in 1962.

John B. Chance, formerly a sales representative in North Carolina and Virginia, will assume duties as branch manager in Goldsboro, N. C.

William Comou becomes sales representative in the Caldwell, Idaho office of California Spray-Chemical where he will act as field man for the Ortho line of agricultural chemicals and fertilizers.

Eldon Glenn moves from Caldwell to Calspray's new Idaho Falls office as sales representative.



Collins

Doane Agricultural Service, Inc. appoints William C. Collins to the post of technical director of all marketing research services performed for companies selling to the farm

market.

Davison Chemical Div. of the W. R. Grace and Co. has named Harry E. Velker manager of the Curtis Bay, Baltimore normal superphosphate plant. Velker succeeds Roy W. Biddle as new general chemical superintendent of Davison's Florida phosphate division.

Biddle will work out of Davison's

Bartow, Fla. installations where he will be responsible for all chemical operations.

George H. Reid, Jr. takes over as manager of Davison's mixed fertilizer plant at Curtis Bay, where W. N. Watmough, Jr. will assume duties in his new capacity as vice-president.

Eastman Chemical Products, Inc., Chemical Div. released news of D. L. Guilian and C. B. DeGreen's appointments as sales representatives.

Guilian will represent the company in sales of its industrial and specialty chemicals in the New York area, while DeGreen will handle sales of the Epolene line of low-molecular-weight polyethylene resins in the southeastern states.

Food Machinery and Chemical Corp. has named Stafford L. Hopwood, Jr. to the assistant managership of its Central Chemical Development Dept. Dr. Hopwood acted as a development engineer for FMC.



Dye

technology of plant disease control.

Hercules Powder Co. names Dr. Eugene D. Crittenden, Jr. to the position of senior technical sales-service representative of the company's Naval Stores Dept. He will operate out of the New York district sales office.

Hooker Chemical Corp. has elected F. Leonard Bryant executive vice-president and a director of the corporation. Bryant has served as a vice-president of Hooker since 1957.

Also elected directors are Thomas F. Willers, a Hooker vice-president, and Werner P. Gullander, executive vice-president and a director of General Dynamics Corp.

International Minerals and Chemical Corp. Eugene Landis, director of transportation for IMC, in the picture below is being con-



Galespie

Landis

gratulated on his election as president of Associated Traffic Clubs of America by L. E. Galespie, retiring president and director of transportation for Reynolds Metal.

Monsanto Chemical Co. announces the following promotions: J. L. Christian, vice president of manufacturing, a member of the Board of Directors and of the executive committee; Edward J. Bock, vice president of the company and general manager of Inorganic Chemical Div.; Dr. James H. Lum, assistant to the president of the company and secretary of Monsanto's executive committee and Henry F. Shea, Jr., managing director of Monsanto Japan Ltd. of Tokyo.

OVERSEAS DIV. Shea Smith, III, director of economic planning; J. R. Glatthaar, assistant director of marketing; Aubrey M. Hillis, supervisor of agricultural chemicals of the Eastern Hemisphere.

John S. Harris has been named to the newly created position of director of economic planning of the ORGANIC CHEMICALS DIV.

INORGANIC CHEMICALS DIV. Edward A. McAdam is the new director of sales-field operations with headquarters at St. Louis, Barton MacDonald replaces McAdam at Cleveland as district sales manager, James L. Brown becomes district sales manager at Atlanta, O. Lee Ryser, district sales manager at Houston and James F. Combs will head a newly-formed instrument research group.

AGRICULTURAL CHEMICALS DIV. Fred J. Gehring becomes manager of public relations, Harrie W. Backes is assistant director of man-

ufacturing, Edward L. Head will be director of sales-promotion coordination, Robert D. McCoy will act as controller and J. Edgar Lumpkin becomes the new credit manager. Charles F. Luecke takes over as assistant director of manufacturing, Gerald J. McKean, as assistant controller and Louis A. Maggs, as manager of packaging. Dr. Ryad R. Irani and Carl P. Schumacher will be the leaders of two recently formed research groups.

NEW SALES APPOINTMENTS for the Agricultural Chemicals Div. Claiborne L. Barber, assistant manager of New Orleans sales district; William O. Butler, assistant manager of St. Louis sales dist.; James A. Oates, assistant manager at El Dorado, Tex. Robert L. Olcott, assistant manager of the St. Louis dist. and stationed at Kansas City; Alwin C. Sherman, assistant manager at Orlando, Fla. and Charles P. Zorsch, distributing superintendent.

Morton Chemical Co. has expanded its Southern Div. William L. Warren has been named sales manager and Dewey B. Hudson, southern region equipment specialist, both of whom are in the picture below.



Hudson

Warren

Olin Mathieson Chemical Corp. has announced the appointment of two corporate vice-presi-



Zodda



Stock

dents, A. T. Zodda who was vice-president for operations of the International Div., and Fred J. Stock, who was vice-president for marketing of the Squibb Div.

Other OM promotions are Roy E. Abraham, and George M. Weimer, division vice-presidents.

F. S. Royster Guano Co. Nido L. Hamilton, newly appointed sales manager of the Norfolk Sales Div., will cover portions of eastern

North Carolina and eastern Virginia. He succeeds T. C. Dula, now sales manager of the Price Chemical Co., Div. of F. S. Royster.

Smith-Douglass appoints Brock L. Hessing as sales representative in Northwest Indiana. Hessing started with the company as a sales trainee.

Spencer Chemical Co. has announced the assignment of William

FLOMAX PUMPS...

ALL-IRON for Liquid Fertilizer
ALL-ALUMINUM for Nitrogen Solutions
with STAINLESS STEEL
studs, nuts, impeller sleeve and shaft seal



The truck is a mobile bulk station with its permanently mounted FLOMAX 8. The trailer, with its own FLOMAX 8, becomes a completely self-contained nurse tank at any farm or ranch—no matter how remotely located. Agriform Co. (Wash.) uses FLOMAX pumps exclusively.

MP Pumps—FLOMAX SELF-PRIMING CENTRIFUGALS—Engine Driven (or belt or electric motor drive) are now the standard for pumping Liquid Plant Foods.

The Open Adaptor: Liquid being pumped can *never* touch the engine shaft or bearing or get into the engine itself.

The greaseless Seal; covered by fluid at all times. Never needs lubrication. Rides on stainless steel sleeve.

Continuous, uninterrupted operation is absolutely important. You must not have interruption of pumping during the handling or application of the liquid. You have continuous performance operation with the MP FLOMAX series.

All-Iron
or
All-Aluminum

FLOMAX 5..1½"..100 GPM
FLOMAX 8..2"..140 GPM
FLOMAX 10..2"..200 GPM
FLOMAX 15..3"..280 GPM



Send NOW for complete information

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PUMPS

NEWS OF THE INDUSTRY



Elleman

L. Elleman as assistant to the vice-president of the Agricultural and Industrial Chemicals Div. Elleman will assist the vice-president, Byron Kern, in coordinating and directing special projects and in developing and carrying out plans for future growth.

Texaco, Inc., elected Charles H. Dodson as vice president in charge of the company's Midwest operations with headquarters in Chicago. Dodson had been general manager of the Domestic Sales Dept. with offices in New York City. He will be succeeded by John I. Mingay, assistant general manager of the Marine Dept. Marvin E. Lundfelt, manager of the Operations Div. of the Marine Dept., in turn succeeds Mingay.

Marion J. Epley, Jr. was named

senior vice president in charge of world-wide sales. Kerry King succeeds Epley as vice president and assistant to the chairman and will have responsibility for the Employee and Public Relations Dept., while Ben Halsell, formerly director of advertising and sales promotion, has been elected vice president in charge of the Employee and Public Relations Dept.

Velsicol Chemical Corp. has added representatives in the Midwest. H. Duane Holsapple and Glenn R. Grosch will be sales representatives for the Agricultural Chemicals Div.



Holsapple



Grosch

U. S. Industrial Chemicals Co., Div. of National Distillers



Winterbotham

sales office.

Witco Chemical Co. Dr. M.

M. Gladstone has been promoted to manager of the Emcol Div. Organic Chemical Div. He will have charge of Emcol marketing, new product development, and coordination of production and sales.



Gladstone

A typical experience in the work-a-day lives of thousands of industries.

DOG GONE IT, PETE, THIS HAS GOT TO STOP!

... Just came from the bag-filling department... Not a man wearing a respirator.

I'm not surprised, Jim. The men would rather breathe dust than wear heavy old respirators.

Here's what you want, men. The Flex-A-Foam Dust Mask—light as a feather!

I know it. But I'm supposed to enforce safety rules. Oh, for a light, comfortable dust mask!

It's sure light and comfortable, but can it do a man-size job?

It should. It filters non-toxic dust particles 100 times smaller than you can actually see.

Seen Purchasing yet? They're up on new developments.

Order a trial dozen, Bob. Maybe they'll wear these without continual prodding.

They're glad to wear Flex-A-Foam Dust Masks. Our troubles are over!

LATER

You're right! We should now equip the entire plant!

(quantity prices as low as \$1.10)

Send Today \$1.45 (Industrial price only)

Try low cost FLEX-A-FOAM and judge proof by performance

FLEXO PRODUCTS, INC.
Westlake, Ohio

MONARCH SPRAYS



This is our Fig. 645 Nozzle. Used for Scrubbing Acid Phosphate Gases. Made for "full" or "hollow" cone in brass and "Everdur." We also make "Non-Clog" Nozzles in Brass and Steel, and

Stoneware Chamber Sprays now used by nearly all chamber spray sulphuric acid plants.

CATALOG I

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Specialty: Analysis of Fertilizer Materials and Phosphate Rock. Official Chemists for the Phosphate Industry. Official Weigher and Sampler for the National Cottonseed Products Association at Savannah; also Official Chemists for National Cottonseed Products Association.

115 E. BAY STREET, SAVANNAH, GA.

FARM CHEMICALS HANDBOOK

Standard Reference Guide for the Farm Chemicals Industry
Write today to

FARM CHEMICALS HANDBOOK
317 No. Broad St. Philadelphia 7, Pa.

Chemicals

\$1,500,000 OM PLANT

A new plant to manufacture phosphoric acid used in the production of high analysis fertilizer will be built by Olin Mathieson Chemical Corp. at Joliet, Ill.

The capacity of the plant is set at approximately 50,000 tons a year, and the phosphoric acid will be a 75 per cent concentrate.

Preliminary work has begun with the completion date set for the end of April 1961.

Production will probably go to fertilizer manufacturers in the Midwest, especially in Michigan, Illinois, Wisconsin, Minnesota, Iowa and Ohio.

"AGROZYME" IN LIVESTOCK FATTENING RATIONS

Merck Chemical Div. announces that use of "agrozyme" is now possible in livestock fattening rations using low-moisture corn.

Research has shown that the grain stimulant is compatible with procaine penicillin, hormones, vitamin A and minerals at recommended use levels. During its introductory period, "agrozyme" was limited to non-medicated foodstuffs, but now it may be used on the same basis as vitamins and other feed ingredients.

It has been used in commercial feedlot operations throughout the southwestern states since April 1960.

ADDITIONAL APPROVAL FOR LIVESTOCK INSECTICIDE

Co-Ral, a 25 per cent wettable powder, has been approved by the U. S. and Canada for control of keds on sheep and goats, reports Chemagro Corp.

It was previously approved for control of fleeceworms, hornflies, lice, ticks and screw-worms on these animals.

It may be applied by almost any type spray equipment and has been marketed for the past two years for control of a variety of insects which attack cattle (notably grubs), horses and swine, in addition to sheep and goats.

PHOSPHORIC ACID PLANT

Construction is 50 per cent completed on a new phosphoric acid plant in Marseilles, Ill., designed by

the Chemical Construction Corp., for National Phosphate Corp. The plant will produce 54 per cent P_2O_5 phosphoric acid by the "wet process," using Florida phosphate rock and 93 per cent sulfuric acid.

Chemico is including special process features to allow a substantial reduction in water requirements and elimination of fluorine from plant effluents.

CLAIMS FOR ETHION OK'D

USDA has approved new label claims for ethion formulations in the control of lygus bugs and other mirids in cotton. This was reported recently by Niagara Chemical Div. of Food Machinery and Chemical Corp.

Ethion 4 emulsifiable concentrate can now be applied to cotton at a rate of 2-3 pints per acre in sufficient water to cover. Similarly, a rate of 25 to 40 pounds per acre has been accepted by USDA for ethion 4 dust.

Neither the concentrate nor the dust should be applied after cotton bolls begin to open. Cotton which

has received late applications of ethion should not be grazed by dairy animals being finished for slaughter.

EPOXY PROTECTIVE COATING SYSTEM

Carboline Co. of St. Louis announces availability of a flexible, amine-cured, epoxy protective coating system. "Carboline Epoxy 188" is recommended for maintenance protection in severe acid, alkaline and salt exposures.

According to the company, it is suited to extreme weathering conditions and will not stress-crack or set up severe stresses on the bond to the substrate.

It can be applied over power-tool cleaned, as well as sandblasted surfaces, at thickness of 3-4 mils per coat and is compatible with tight, residual epoxy coatings.

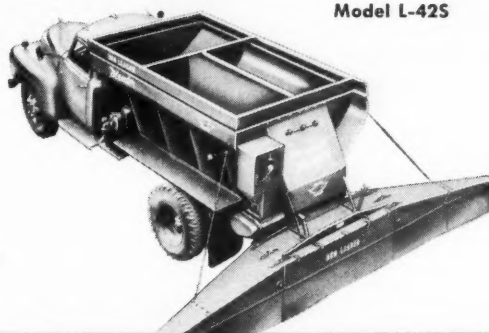
WINTERIZING COATING FOR SHRUBS AND EVERGREENS

A new liquid plastic compound that "winterizes and wraps a protective coating" around shrubs

Accurately Blends and Spreads 3 Fertilizers at Once! NEW LEADER MOBILE BLENDER

Model L-42S

- Lets you offer mixed analysis at lower, bulk rates!
- 3 Separate compartments!
- 36" Conveyor synchronized to speed of truck by drive shaft drive!
- 7.0 H.P. Engine drives Twin Spinners!



DEMAND FOR CUSTOM SPREADING IS GROWING

More and more farmers want the convenience of a bulk spreading service. It saves them time, equipment and maintenance expense *plus*, up to \$4-\$8 per acre over bagged goods. Let us help you get started in business with "New Leader".

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Mail coupon for L-42S literature and a copy of "Your Land Is Different" a booklet designed to help you sell more bulk fertilizer.



NEWS OF THE INDUSTRY

and evergreens, keeping them safe from cold, winds and snows, was released by the Garden Div. of FX-Lab Co.

Marketed under the trade name FX-2 Plant Detector, this new substance is a concentrated, non-toxic, emulsifiable, plastic compound. The coating is thrown off as normal plant growth is resumed in the spring.

GRANULAR SNAKE REPELLENT

A Georgia company has announced completion of tests in the development of a snake repellent. The product is a granular material which is applied to gardens, fields, lawns and shrubbery in the ratio of one pound per 420 square feet of soil.

The repellent was declared successful about two years ago but was not marketed because of continuing tests to establish efficiency and safety and because of prohibitive expense of chemicals used. Progress in experimentation with the snake-repellent, which is also a reptile-icide, indicates that costs have been reduced to bring the product within reach of the average home-owner or camper.

Government

CROP AND FERTILIZER SYMPOSIUM

TVA and the Southern Regional Soil Research Committee will jointly sponsor a symposium on "Effects of Environment on Crop Response to Fertilizers" at Muscle Shoals, Alabama, on January 25 and 26, 1961. It will be held in connection with the annual fertilizer evaluation conference sponsored by these groups.

The first session will be concerned with moisture-yield response relationships, and the second will include topics concerning temperature effects on nutrient uptake.

Tours of TVA's research and production facilities will be available for all in attendance. Scientists and commercial representatives interested in research in these fields are invited to attend. For information on program, lodging, etc., please contact G. L. Terman, Chemical Engineering Building TVA, Wilson Dam, Alabama.

"POWER TO PRODUCE"—1960 AGRICULTURE YEARBOOK

1960 Yearbook of Agriculture, "Power to Produce," published September 25, describes in layman's language the dramatic change from horse-drawn operations to pushbutton automation. Edited by Alfred Stefferud, and written by 90 engineers and technicians in USDA and industry, "Power to Produce" includes 96 pages of photographs and is designed for anyone interested in the tremendous benefits and problems that farm technology have brought this country.

Copies can be bought at \$2.25 each from the Superintendent of Documents, Washington 25, D. C.

LARGE-SCALE EXPERIMENT IN BOLL-WEEVIL CONTROL

A large-scale experiment to destroy boll weevils as the insects prepare for hibernation will be conducted in several southern states this fall. The experiments will be made cooperatively by USDA's Agricultural Research Service and the Agricultural Experiment Stations in Texas, Mississippi, Louisiana and South Carolina, with the financial assistance of the National Cotton Council.

Designed to strike the weevil at a weak point in its life cycle, the experiments will test a promising new method. At this season, a small percentage of weevils enter a stage of development called *diapause* in preparing for hibernation. They become sluggish, cease breeding and store up enough fat to carry them through the winter. Insecticides applied in the fall can destroy the weevils before they are in complete diapause and ready to hibernate. Precise timing is essential.

Use of insecticides before the cotton crop is made protects the current crop but generally leaves enough weevils to enter diapause and subsequently survive the winter in sufficient numbers to constitute the usual threat the next spring. After diapause, the insects move to woods trash for winter protection and disperse over too wide and inaccessible an area for effective treatment.

Methyl parathion will be ap-

plied this fall, two to four times at about 10-day intervals before frost on cotton acreage in Texas, Louisiana, South Carolina, Mississippi and Arkansas. Checks will be made after treatment to see how many weevils survive.

Similar treatment in tests last year on 525 acres in Texas resulted in almost complete extermination of the boll weevils. This spring, no weevils were found in treated fields until July 8, when only a trace infestation of less than one per cent in two treated fields was found.

Discovery of the diapause phenomenon was made in 1957 by Drs. J. R. Brazzel and L. D. Newsom, entomologists with the Louisiana Agricultural Experiment Station.

Destruction of weevils entering the diapause stage cannot be expected to provide high degree of control or eradication unless practiced on a large scale, because of possible invasion from near-by untreated areas. Annual losses from the boll weevil in the Cotton Belt are estimated in recent years at more than \$300 million.

Equipment Supplies

PAYLOADER TRACTOR-SHOVEL



Material handling in the fertilizer plant of the Arkansas Plant Food Co. at North Little Rock is the job of a fleet of seven Payloader tractor-shovels. The 400 foot long building contains about 50 different piles of fertilizer material in addition to 33 side storage bins. Three Model 30R shovels (3,000 pounds operating capacity) are used to load the hoppers of the two mixers in the plant. Unloading box cars is the task of four smaller Hough machines.

If you would like to have more information on the Model 30R,

CIRCLE 360 ON SERVICE CARD

FARM CHEMICALS

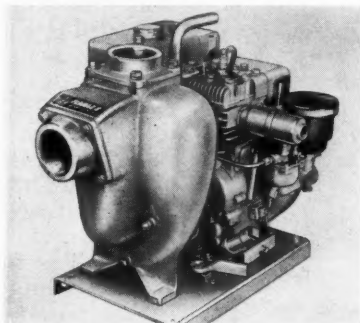
PULL-TYPE FERTILIZER APPLICATOR

Schelm Brothers, Inc. has announced its Model "G" applicator, a pull-type fertilizer applicator for non-pressure nitrogen or complete mix fertilizers. Rate of flow is maintained regardless of material level in the tank. Application rates range from 5 lbs. to over 7500 lbs. total weight of material per acre, at travel speeds up to 15 mph.

It is available with PVC plastic booms in 18, 24 and 33 foot lengths as well as Schelm's 5-knife tool bar for sub-soil application. Nozzles are on 12" centers and provide either full coverage or band application.

Further information and prices on Model "G" are available if you, CIRCLE 361 ON SERVICE CARD

ALUMINUM ENGINE DRIVEN PUMPS



A new pump for nitrogen solutions, made entirely of aluminum with stainless fittings, in 1½" and 2" sizes is now being manufactured by Marine Products Co.

Having capacities of 100 and 140 GPM, the new MP pumps incorporate such features as flanges on both suction and discharge, an opening between the engine and pump to prevent solutions from contacting the engine and interchangeable parts. The MP is self-priming with a built-in check valve to prevent siphoning. The shaft is of stainless steel with ceramic seal.

For more facts please, CIRCLE 362 ON SERVICE CARD

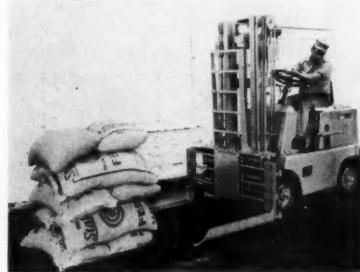
HEAT TRANSFER AND PROCESS EQUIPMENT

Niagara Weldments, Inc. offers fabricating services for building equipment to customer-engineered designs and standardized lines of storage water heaters, instantane-

ous heaters, hot water converters, brine coolers, pressure vessels, organic vapor condensers.

The company has released an illustrated 4-page bulletin on its equipment and services which will be sent to you, if you CIRCLE 363 ON SERVICE CARD

PALLETLESS BAG HANDLING TRUCK ATTACHMENT



New fork truck attachment for palletless handling of bagged goods has been announced by Industrial Truck Div., Clark Equipment Co. The attachment consists of two 45" long scoop arms which can be spread 67" wide or clamped to 17". They are hydraulically actuated to clamp bags. A side-shifting mechanism is also incorporated.

It has a maximum capacity of 3500 pounds and is designed to fit all Clark fork trucks. If you wish to know more,

CIRCLE 364 ON SERVICE CARD

AGRICULTURAL MODEL SPREADER FROM ROTO-WERL

Introduction of a new "Agricultural Model" spreader has been announced by Hatfield Roto-Werl Corp. Similar to Roto-Werl's original model in outward appearance and principle of operation, the Agricultural model has been increased to 3'9" in height, employs a different wheel bearing system and tire size (600 x 12).

As its companion model, the spreader is reported to combine time-saving speed (10 acres per hour) with accurately controlled spread rate and an even spread pattern. Effective coverage area is up to 35 feet, depending upon density of the material used.

The spreader is intended for use with all free-flowing materials such as fertilizer, seed, herbicide, and top dressing.

For details,

CIRCLE 365 ON SERVICE CARD

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Suppliers Briefs

Alco Oil and Chemical Corp. has manufactured a new spray mulch—Vulcanol—which is overcoming erosion problems along the 173-mile New Jersey Garden State Parkway. The mulch is relatively harmless to animals and humans and forms a web-like non-water soluble coating.

In an experimental treatment of erosion along the parkway about one-third tank of Vulcanol was required, and the application time was approximated at one-half to three-quarters of an hour per acre.

Allis-Chalmers Manufacturing Co. West Allis Centrifugal Pump and Compressor Depts. have consolidated under management of E. F. Greiwe, who had been manager of the Norwood, Ohio Works Centrifugal Pump Dept.

American Vermiculite Corp. has announced establishment of an

NEWS OF THE INDUSTRY

Amverco franchised plant in Tampa, Fla. for Verlite Co. It will produce a full line of vermiculite aggregates, as well as mixed, molded and precast vermiculite products. Vermiculite is used as a caking preventative in fertilizers, and as a carrier in pesticides.

Harvey Lawhead is vice president in charge of production at the new plant; Allan D. Ayers, in charge of sales; O. W. Dixon is president of the company; W. A. Krusen, secretary-treasurer.

Bemis Bro. Bag Co. has appointed Addison M. Smith assistant to the president. He will move from Bemis western operations headquarters in San Mateo, Calif. to Minneapolis. Smith had been cost analyst at San Mateo prior to his promotion.



Smith



Daily

David I. Daily has been appointed West Coast sales representative for the Packaging Service Unit of Bemis.

Highway Equipment Co. Happel and Sons, Inc., Cedar Rapids, Iowa is a new distributor for the company. They handle New Leader lime spreaders, combination lime and fertilizer spreaders and mobile blenders and serve portions of Iowa.

Address of Happel is 309 Third Ave., S. W., Cedar Rapids, Iowa.

International Paper Co. will propose a three-for-one split of its common stock to the company's stockholders at a special meeting on December 5, 1960. The cash dividend is up 5% from the 75-cent per share dividend paid quarterly through last June.

Hudson Pulp and Paper Corp.,



Brody

Multiwall Div., appointed Howard Brody as its new product manager. He will be responsible for keeping abreast of all developments in the multiwall field and for coordinating Hudson's efforts to meet its customer's packaging needs.

Michigan Chemical Corp.'s new bromine plant at El Dorado, Ark. is now completed and in operation. This doubles the capacity of this facility which is a joint venture with Murphy Corp. of El Dorado.

Vulcan-Associated Container Companies, Inc. held its first regional sales meeting in the Bellwood, Ill. plant of the 7-plant organization. It was attended by more than 50 sales-service personnel.

West Virginia Pulp and Paper Co. is offering a new design service to its customers, which will be translated into a series of preliminary and finished designs without cost to the customer.

Bradbury Thompson, art director and designer, will be design consultant.

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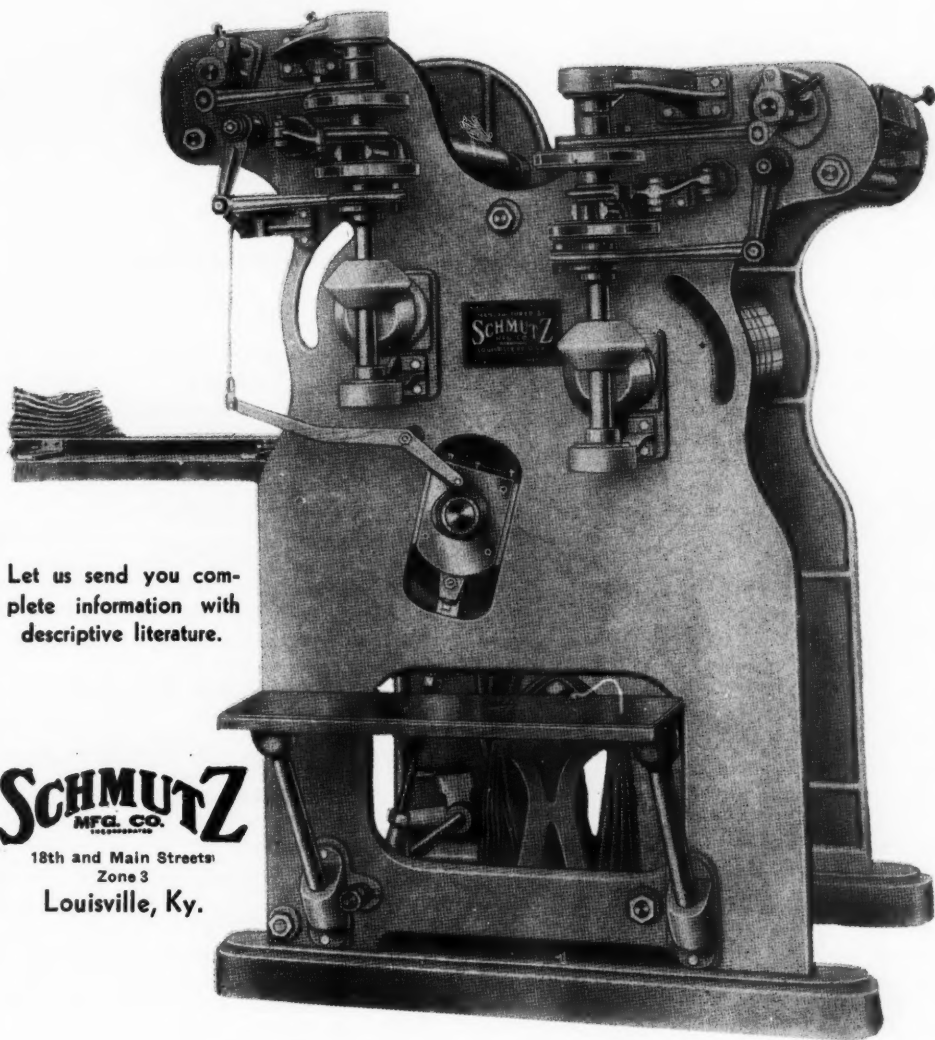
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Dispatcher relays request from farmer to field man.



RADIO speeds Simplot customer service

Efficiency of the Washington fertilizer firm is reported to be increased in

RADIO HELPS US give the farmers of our area complete year-round service," reports John Thomas, manager of the Sunnyside operation of the J. R. Simplot Company.

At Sunnyside, Simplot has installed Motorola mobile radios in three vehicles—Thomas' car and the trucks of two field men. These three men, with the aid of six others at the branch, provide the farmers with complete fertilizer and farm chemical service.

During the fall and winter months, activities center on dry fertilizer for the spring plantings. In the heart of winter, the company concentrates on taking samples for testing the balance of primary nutrients. Many of these samples are taken at specific requests by farmers. The summer months are occupied with side dressings of growing crops.

How does radio tie in with these operations? In several ways, says Thomas.

Each field man covers a specific territory. His job is to see that the farmers in his area receive all service required. In achieving a complete program, the field men find radio serving as their "right hand man." The reason—radio enables them to quickly answer requests, regardless of the nature of the call. This is accomplished by the speed of contact radio makes possible. Should a farmer call the Simplot office requesting aid on a particular problem, all the dispatcher need do is radio the nearest field man.

In effect then, the field men are radioed from job to job, at a saving of valuable time. As an illustration, should a farmer phone Simplot requesting aid in applying a chemical, the dispatcher will relay the message to the proper man via radio. Upon completion of his present job, the field man will drive to the scene of the request. Without radio, the office dispatcher would have been forced to wait until the

field man had returned before informing him of the second job. This would not only have been a severe waste of time but would have cost the company considerably in wasted fuel expenses. Should the second call have been within immediate range of the first job, the loss would have been even heavier.

Recently a farmer 20 miles from the office phoned in for service. He was a mile from the field man. Without radio, the time and cost required to travel 40 miles would have been wasted.

Manager Thomas reports that the company is saving approximately 10 per cent in gasoline costs through radio dispatching. Not estimated was the saving in vehicle wear and tear, but it also is substantial.

EFFICIENCY INCREASE: 25 PER CENT

Because the men can be radioed quickly to jobs, they can handle more requests in a day. This includes Thomas who also performs quite a bit of field work. John estimates that radio enables three men with radio-equipped vehicles to do the work of four without radio support, representing an increase in efficiency of 25 per cent. Among other services performed by the field men are diagnosing crop deficiencies, and repairing all pieces of equipment that have broken down.

There are still other valuable uses of the Motorola radio system. When problems arise at jobs that cannot be answered by the field men, Thomas is radioed for the solution. A trip back and forth from the farm to the office is saved. Credit is checked by radio as well.

Should any of the field men experience vehicle failure, radio is invaluable in securing aid. If one of the men is, say, 35 miles from the office in an area



As he was about to pull away from the office, field man receives the request over radio installed in his truck.

in winter and summer by two-way mobile radio

By BILL MAHONEY

where telephone facilities are non-existent, he might be out of contact all day if he didn't have radio. His value to the company would be lost for an entire day.

In delivery activities, radio pays dividends. When finished, farmers leave the tanks by the road and phone Simplot. The call is relayed to the field man who picks the tank up on his way to the office. This action minimizes the possibility of ever running out of tanks—something which is a strong possibility on busy days, reports Thomas. If a tank were not available, a delay for the farmer would be caused. This would hinder good farmer-company relationships.

CUSTOMER RELATIONS ARE BETTER

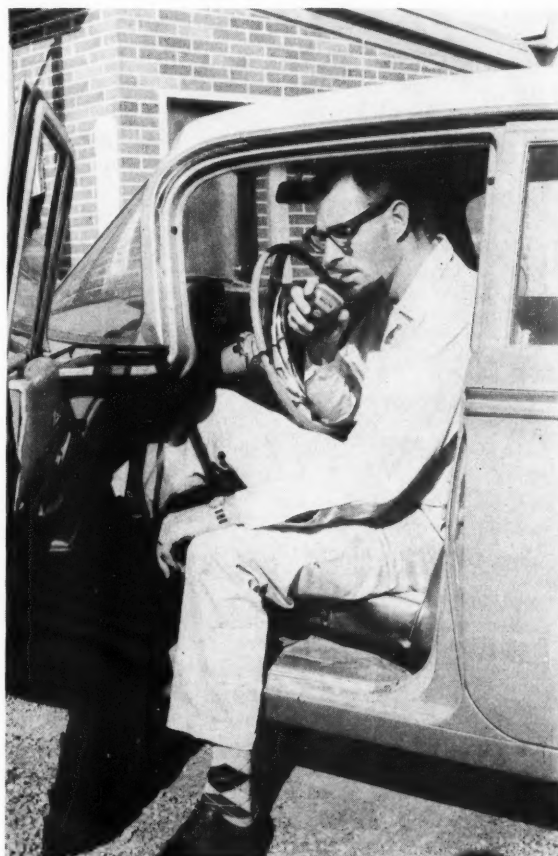
The benefits radio has made possible affect the customers as well. The fast service that has resulted from the radio installation has been a definite customer-relationships booster, reports Thomas.

In winter, the field men are frequently radioed to take soil samples at a farmer's request. Efficiency in this phase of the operations has also been increased by radio. In addition, the field men utilize their time in the winter making collections and calling on prospects. Many times they are radioed to the farms.

With radio, Thomas has accomplished that impossible feat of being in two places at once. Should he be needed to answer a question at the office while he is in the field, radio provides the solution.

The radio system consists of a 60-watt Motorola base station remotely controlled from the Simplot office, and the three mobile units. The system is licensed by the Federal Communications Commission on a VHF frequency.

The success of the system, installed in the summer of 1959, has prompted Thomas to make plans for its expansion. ▲



Manager John Thomas uses radio in his car to check with office. Thomas wears beard as part of Ben Snipe's Day celebration.

Shell Streamlines its Packaging Operation

Shell uses 5-ply, Clupak extensible bags for 65-70 per cent of its fertilizers and polystyrene resins and expects this percentage to rise in the near future.



Fig. 1 contrasts the old and new design on Shell Chemical's bags. New designs, used for polystyrene, reflect "quality image" and obtain maximum product identity. Bleached extensible paper is used in their manufacture.

THE Shell Chemical Company now packages 65-70 per cent of its fertilizers and polystyrene resins in multiwall bags made of Clupak extensible paper and expects this percentage to increase.

The company has found that these bags which it purchases from several suppliers cost less than comparable kraft bags and that they fill easier.

Ammonium sulfate, tri-super phosphate, ammonium phosphate sulfate and diammonium phosphate are packaged in 80- and 50-lb.-capacity bags, and the polystyrene—a new product for Shell—is packaged in 50-lb. bags. The design of the imprinting for the polystyrene bags marks a departure from the traditional Shell bag design and was created by Raymond Loewy Associates especially for the new product.

The Clupak extensible paper bags used for the fertilizers are three ply—two plies of 50-lb. basis weight and one ply of 70-lb., for a total basis weight of 170 lb. This compares with four-ply kraft bags made up of one 40-lb. ply, two 50-lb. plies and one 60-lb. ply, for a total basis weight of 200 lb. Thus, there is a basis weight saving of 30 lb.

Clupak extensible paper bags for polystyrene are of five-ply construction—three of 40-lb. basis weight and one each of 50 and 60-lb. basis weight. Total basis weight is 230 lb. Kraft polystyrene bags also are five-ply units, but four of these are 50-lb. basis weight, and one is 60-lb., for a total basis weight of 260 lb. Thus, again there is a reduction of 30 lb. in basis weight. The reductions in basis weight result in an overall reduction in bag costs of about 7 per cent, an appreciable amount when it is considered that Shell uses hundreds of thousands of bags per year.

Inherent strength built into Clupak extensible

FARM CHEMICAL



Two men in photo are discussing Shell's new polystyrene bags. Of 5-ply construction, they are 230 lb. total basis weight.

paper enables lighter weights to perform jobs otherwise requiring heavier-weight kraft. The extensible paper is made on a standard paper machine equipped with an extensible unit which compresses the paper web and gives the finished product a completely new property of energy absorption and stretchability enabling it to withstand shock to a greater degree than ordinary paper. The lighter-weight extensible paper can therefore perform jobs formerly requiring a heavier paper, with resulting dollar savings.

FILLING ADVANTAGES CITED

Shell Chemical has also found that the more pliable Clupak extensible paper bags fill easier; that is, the incoming material, especially lighter materials, fill out the gussets more readily than in bags of stiffer kraft. With conventional kraft bags, bagging machine operators frequently slap the bag to fully open and fill it. This often will prematurely cut off the filling machine with the result that underweight bags must be opened and "topped" at the inspection station or, worse, an underweight bag goes out into the field. It is believed that the Clupak extensible paper bag has totally eliminated the "slapping" operation.

Shell Chemical's new polystyrene bag was given a new design because the marketing department felt this was an opportunity to take advantage of modern packaging design knowledge to gain maximum product identity. Bags for established products have not been changed, the feeling being that the market is familiar with the present design and to change might lose more than would be gained.

In discussing the new design as contrasted with the

old one shown in Fig. 1, Dave Osler, vice president of Raymond Loewy, said: "In addition to obtaining maximum product identity, we also wanted to reflect a 'quality image.' To that effect, a bleached extensible paper was recommended, even though more expensive than the natural grade. This immediately makes the Shell Chemical bag stand out among others in the customer's warehouse. (From a practical warehousing standpoint, spaces for label information were designed near the bottom of the bag to enable ready identification when the bags are palletized.) From an aesthetic viewpoint, the combination of blue-gray 'polystyrene' letters with the traditional red and yellow Shell Chemical colors and the white bag make what we feel is an exceptionally attractive package, especially for an industrial product. Among other factors to note is the breaking up of the word 'polystyrene' to make it more digestible for the average person, and the new treatment of the world-famous Shell emblem."

VALVE BAGS USED

Shell Chemical has standardized on valve-type bags, the valve being folded over and tucked inside the bag when the bag has been filled.

The method of making extensible paper was invented by Sanford L. Cluett, vice president of Cluett, Peabody & Co., Inc., who also invented the shrink-resistant process behind the Sanforized trademark. Clupak, Inc. is the company which licenses paper manufacturers to produce extensible paper and is carrying on extensive research and development of the product. To date, Clupak, Inc. has 16 licensees in five countries. ▲

TOURING the ROTHAMSTED STATION

*During Jess Garman's trip to Europe
he visited the historically-famous
Rothamsted Station. There he
viewed experiments, with grasses
and cereals, conducted continuously
for more than a century.*

Dr. Willard H. Garman, chief agronomist for the National Plant Food Institute, recently attended the Eighth International Grassland Congress in Europe. In this, the second of his two articles, he discusses some of the experiments carried on in Rothamsted, the historically famous research station in England.

ONE cannot talk about England without mentioning the historically famous research station known as Rothamsted, located only a few miles north of London.

Here both grasses and cereals have been grown continuously for more than 100 years. Many newer experiments have been started in recent years, but it is still the older ones that receive most of the time and attention of the hundreds of people from around the world who visit the station every month of the year.

Because of the numerous experiments and important findings now available from Rothamsted, Dr. Willard H. (Jess) Garman has chosen to give examples from three of the experiments.

TABLE I. Wheat Since 1843

Annual Treatment	Average Yields		
	1852-1925	1935-1954	
		1st Yr.	4th Yr.
None.....	13.0	30.0	16.8
14 tons manure.....	35.5	48.6	35.5
Complete fertilizer....	37.4	46.7	37.4

Yields 1935-1954 are for the 1st and 4th crops after fallowing. Complete fertilizer: N at rate of 130 pounds, P₂O₅ at 76 pounds, and K₂O at 100 pounds per acre annually, or approximately equivalent to 1,000 pounds/A of a 13-8-10 fertilizer.

The Broadbalk Field experiments with continuous wheat have brought out several important points. One of these is that weeds became a serious problem, and that is why fallowing was started in the 1920's.

The effect of fallowing is also of interest. The first year's crop after fallowing was usually at least double the average size of the previous crops.

Similar results from manure and fertilizer

Another major finding of interest is the similar yields produced by manure and complete fertilizer, when applied at rates to supply comparable amounts of plant foods, as was the case in the wheat experiments. In Table I you will see that the 14 tons of manure produced almost the same yield as the fertilizer treatment. The latter supplied the equivalent of approximately 1,000 pounds of a 13-8-10 per acre per year. The manure treatment supplied approximately 1,000 pounds per acre of a 14-7-14 fertilizer annually.

Thus, the real story seems to be told by the pounds of plant foods applied to the soil, rather than by any added effects from the organic matter supplied by the manure.

Although the best wheat plots yielded about 10 per cent above the English average over the period 1852-

1925 for wheat grown in rotation, that is only about half of what a present-day farmer grows with the best varieties.

The original objective of Lawes and Gilbert was to compare manure with the fertilizer materials then available. In their wheat experiments they added comparable amounts of plant food, but in their barley experiments they failed to do this for some reason. That is why, in Table II the yield of barley on the manure plot was greater than that on the complete fertilizer plot. The latter received almost 100 pounds less nitrogen per acre annually over the 107 year period, so it is surprising indeed that it yielded only six bushels less.

TABLE II. Barley Since 1852

Annual Treatment	Average Yield 1852 to 1958
None.....	13 bu.
Manure for 20 years.....	22 bu.
Manure for 107 years.....	43 bu.
Complete fertilizer.....	37 bu.

Manure at rate of 14 tons per acre annually. N at rate of 43 lbs. per acre, P_2O_5 at 70 lbs., and K_2O at 100 lbs. annually, or equivalent to 700 lbs./A of a 6-10-14 fertilizer.

The quality of the barley grain varied with treatments and with season. Although the manured plots gave the highest yields, the quality was almost always poor.

A feature of Rothamsted results on all crops has been the success of the complete fertilizer treatments. The highest quality barley on Hoosfield throughout the years was grown on the N-P-K plots.

TABLE III. Hay Since 1856

Treatment	Average Yield: 1939-1958
None.....	1,120 lbs. dry matter per acre
Manure.....	2,688 lbs. dry matter per acre
Complete fertilizer.....	4,816 lbs. dry matter per acre

Yields are for first cutting of hay only. Manure: 14 tons every two years. N at rate of 130 pounds, P_2O_5 at 70 pounds, and K_2O at 250 pounds per acre annually, or equivalent to 1,000 pounds/A of a 13-7-25 annually.

The Rothamsted grass plots forcefully point out the necessity for using a balanced fertility program. When the minerals are adequately maintained, production can be increased about as desired with the application of nitrogen.

Poorest plots had only weeds

On all of the plots except the N-P-K and the manured plots, the quality of the forage was very low. On the poorest plots the vegetation consisted of weed species, with no desirable grasses or legumes. Keep in mind that the many species present on the different plots today are the product of the treatments, as seed of no kind has ever been applied.

After more than 100 years boundaries of the plots are still clearly defined, proving that there is practically no lateral movement of fertilizers in undisturbed soil. ▲

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"One step beyond"

Will historians, 50 years from now, look back on the farm chemicals industry and remark, "How did they ever get along without the digital computer in production and marketing?"

Here's a machine that can take combinations of fuel, raw materials, temperatures, pressures and other "variables" to produce optimum amounts of quality fertilizer under varied conditions . . .

. . . and can also read marketing data and solve such problems as predicting the amount of fertilizer needed for a given trade area, or determining where to build a new warehouse!

Though we were impressed with what we saw last month at Monsanto Chemical Company's computer-run Barton plant for the production of ammonia, at Luling, Louisiana, we were also amazed to find so many engineers and technicians around the place.

The bank of instruments observed by two operators, the two electric typewriters keeping automatic records of the operation and the logging machine that periodically begins clicking whenever new process facts make themselves known—all are controlled by *people*. In fact, there are five more people working at this plant now than before the computer began "running" things.

There are times when the computer just doesn't "understand" what is taking place and that's where trained engineers set things straight again. "There's just no substitute for experience."

Basically, the difference between manually-operated and computer-run installations is speed and accuracy. The electronic machines do nothing but *count*. It's up to *people* to plan their jobs for them.

The potential of computers is unlimited. However, it's not likely that they will replace manual control in many farm chemicals plants for a long time to come.

Grant E. Russell, manager, Systems Engineering Section of Monsanto's Research and Engineering Division, told a group of editors observing the plant:

"There are certain criteria of size and complexity which must be met before a computer is justified. Our studies indicate that unless a relatively small percentage increase in profit will support the necessary investment, the plant is probably too small for digital computer control. If the preliminary studies show that large in-

creases in yield or efficiency are possible, it is quite likely that these can be gained by engineering changes or better instrumentation."

Something for plant managers and engineers attending this month's Fertilizer Industry Round Table in Washington, D. C. to ponder is this statement by Russell:

"It is somewhat anomalous that the existence of process control computers should inspire improvements in *engineering* practice. It would seem more logical that theoretical developments in engineering would demand computers for their *application*!"

Another area which will feel the influence of computers is measurement and instrumentation.

"The computer requires information from various measuring instruments in the plant; furthermore, it makes new demands on the accuracy of such measurements," Russell said.

On the marketing side, computers are apt to cause a few red faces in advertising departments as display advertisements are "sized up" by the little giant.

Monsanto has also found that it can predict next year's poultry and livestock population so that output of various agricultural and feed chemicals can be planned!

It's obvious that the digital computer solves one of the biggest problems of the farm chemicals industry—maintaining a steady supply of a product all during the peak season. It constantly tells you where bottlenecking exists and *how it can be eliminated*. Thus it enables a company to optimize its production under rapid changes.

What a tool it would prove to be against *price-cutting*—if every company owned one!

The computer conceivably would be capable of handling intermittent, day-by-day market data during the peak season, as well as continuous data—which then could be *automatically interpreted and presented to analyze the market intelligently*, rather than depending on hear-say.

The point we wish to make with this editorial, however, is that whether your company ever becomes big enough to support one of these mechanical brains, *management* will always be the key to the success of any operation.

An International Harvester executive recently was quoted as saying:

"Management is the only unique feature which any business firm can expect to have which no competitor can exactly copy or duplicate."

GORDON L. BERG

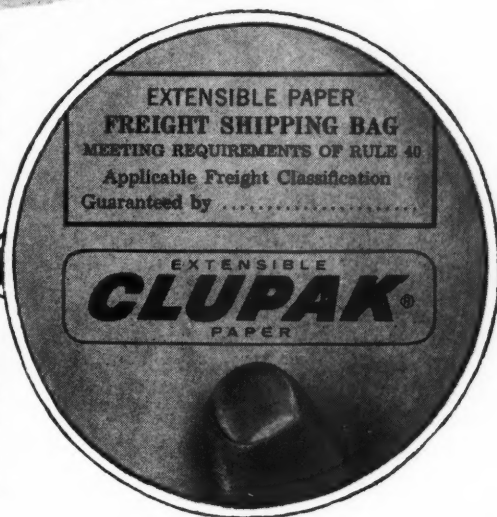
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